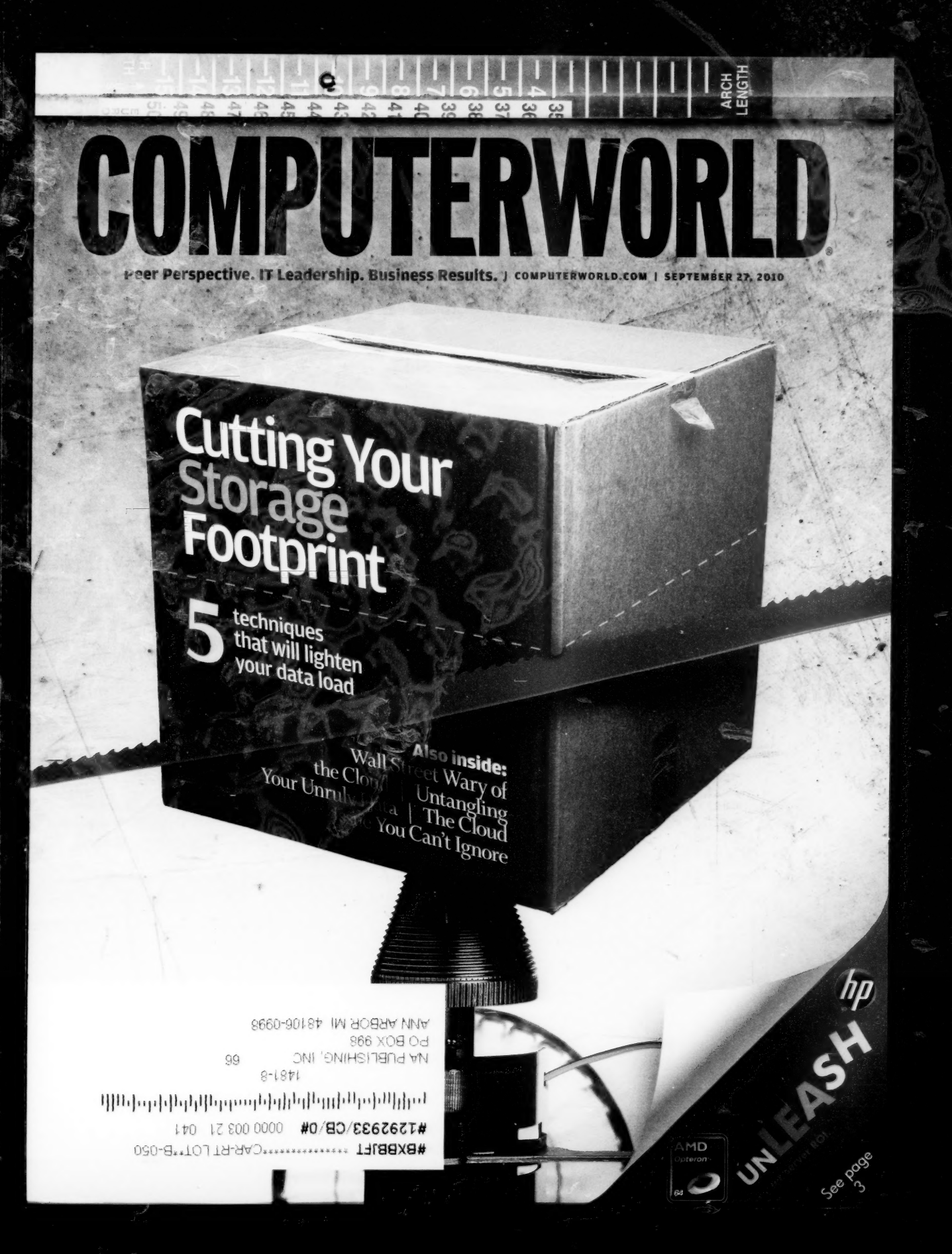
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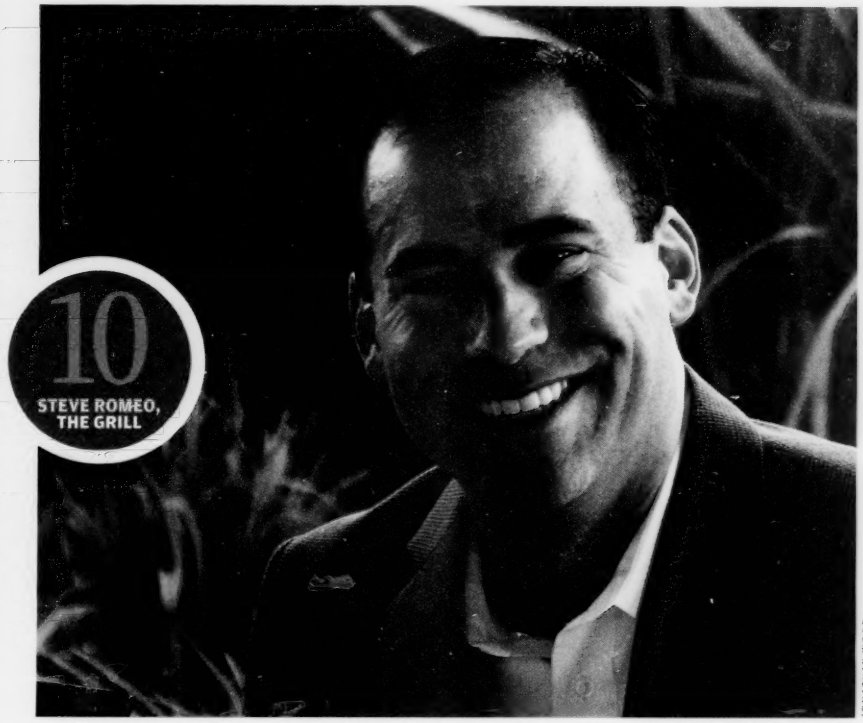

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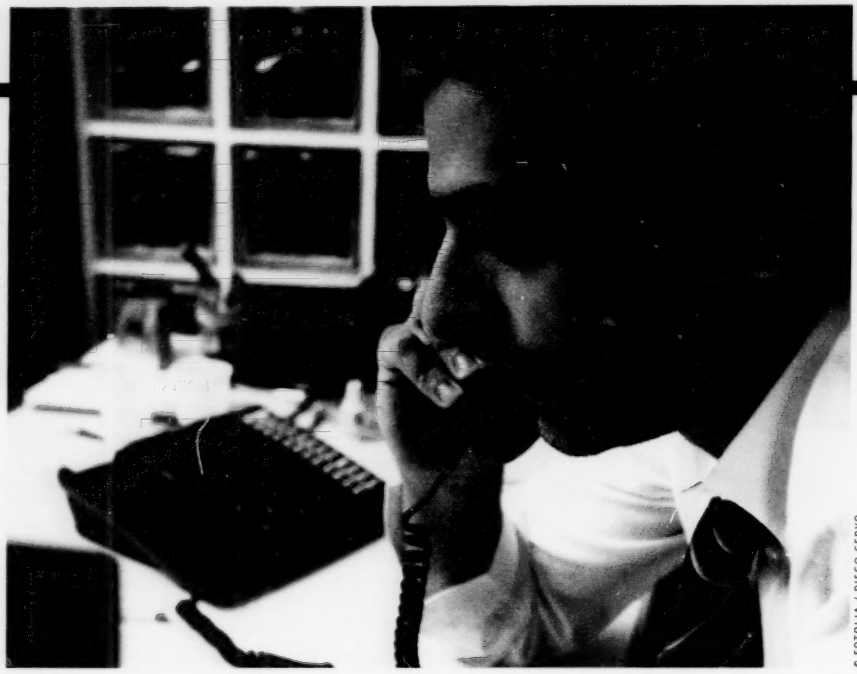

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SOCIAL ENGINEERING

Workers Readily Divulge Sensitive Info

OF 135 CORPORATE EMPLOYEES targeted by social engineering hackers in a recent contest, only five refused to give up any business information whatsoever.

All five were women.

At the DefCon hacking conference last month, hackers targeted 17 major corporations, including Google, Wal-Mart, Symantec, Cisco, Microsoft, Pepsi, Ford and Coca-Cola. Sitting in a Plexiglas booth, with an audience watching, contestants called company employees and tried to get them to divulge business and technical details.

The contestants were extremely successful, said Chris Hadnagy, one of the event's organizers. Just one company didn't divulge the secrets the participants were trying to dig up, and that was only because the hackers couldn't get an employee there to answer the phone.

Many contestants got their information by pretending to be insiders who were doing audits, or consultants filling out surveys.

"If I took away one thing from the discussion, it's that the best defense is to train all of your personnel to validate who they are talking to if they don't recognize the voice, before sharing any information about your company," said Christopher Burgess, a senior security adviser at Cisco Systems Inc., one of the companies targeted.

What about the five women who were suspicious and refused to provide any information to the hackers? "Within the first 15 seconds, they were like, 'This doesn't seem right to me,' and they ended the call," Hadnagy said.

– Robert McMillan, IDG News Service

INTERFACES

Standards Group Eyes Web Pages That Talk, Listen

A new group at the World Wide Web Consortium is exploring the possibility that in the near future, Web browsers could read pages aloud or permit users to complete online forms via voice commands.

The W3C's new HTML Speech Incubator Group is studying the feasibility of developing a standard Web interface for both voice recognition and speech synthesis, said group chairman Dan Burnett, who is also director of speech technologies and standards at Voxeo Corp.

The incubator group will file a report in one year assessing the feasibility of adding speech input and output features to HTML5, the standard for rendering Web pages.

AT&T, Google, Microsoft and the Mozilla Foundation, among others, all have engineers participating in this effort.

Burnett noted that while the report would analyze the feasibility of integrating speech with HTML5, the work of developing the interfaces themselves would be handled by another W3C unit, such as the HTML Working Group.

Already, the human voice and the Web aren't strangers: Google includes a voice-based Web search app in its Android smartphone operating system, and Microsoft promises robust voice-driven features in its upcoming Windows Phone 7.

– JOAB JACKSON, IDG NEWS SERVICE

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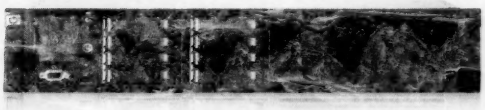

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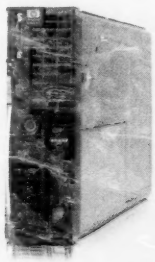

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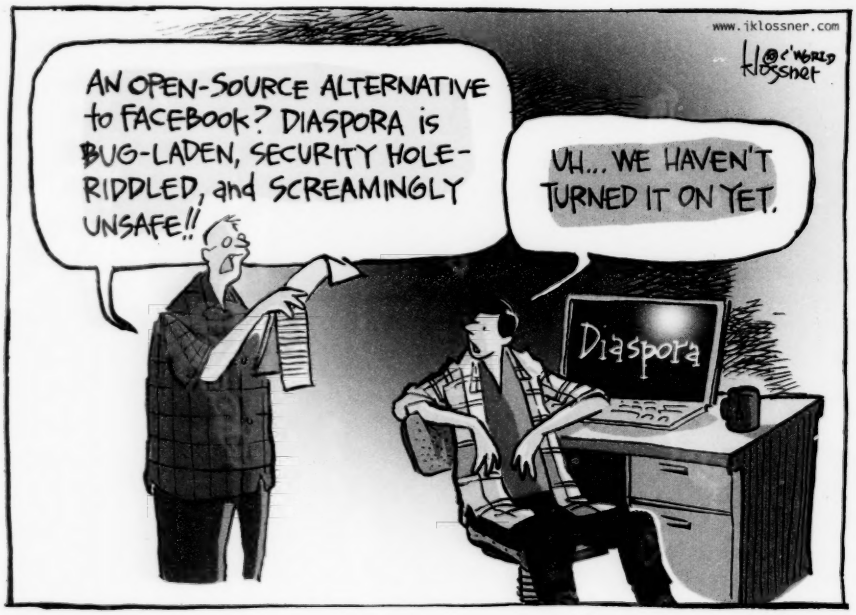
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NET IMPROVEMENTS

Researchers Aim to Rebuild the Internet

THE NATIONAL SCIENCE FOUNDATION late last month announced four research projects focused on developing a more robust and secure Internet.

The projects — each of which will get up to $8 million over three years — are part of the NSF's Future Internet Architecture program. The NSF said 60 researchers at over 30 institutions will evaluate the following schemes:

- **Mobility First.** The original Internet was based on fixed endpoints, but this new architecture would be "centered on mobility as the norm, rather than the exception," the NSF said. It would support context- and location-aware services and use "self-certifying public-key addresses" for security.
- **Named Data Networking.** Instead of routing traffic based on computers' IP addresses, this new architecture would focus on the actual content ("named data") being transported and then secure the data itself rather than the communications path.

"It is a radical shift, but one that we think enables a qualitatively better path to eliminating redundant network traffic, securing communications, and enabling very large numbers of wireless and mobile devices," said Patrick Crowley, a computer scientist at Washington University in St. Louis.

- **Nebula.** This architecture would turn the Internet into a global cloud computing system of data centers, all linked by a high-speed, extremely reliable and secure backbone network.
- **Expressive Internet Architecture.** This would include built-in security so that users can be assured that the Web sites they visit and the documents they download are legitimate. Also, users would obtain content from the closest source, not necessarily the original host of the content.

"A lot of wisdom is embedded in the current Internet, and we'll retain that," said Peter Steenkiste, a researcher at Carnegie Mellon University. "But parts of it are clearly broken and can't be fixed with incremental steps."

– *Mitch Betts*

Micro Burst

In a survey of 1,004 Web users,

32%

said that they would abandon a slow Web site after waiting one to five seconds for it to load.

FUTURE WATCH

Intel: Gadgets To Learn Users' Daily Habits

The future of computing lies in devices that are not only smarter but also more aware of the habits and day-to-day lives of their users, says Justin Rattner, Intel Corp.'s chief technology officer.

At the annual Intel Developer Forum earlier this month, Rattner said the computing devices of the future will be context-aware and will able to act as personal aides.

"Future devices will constantly learn your habits, the way you go throughout your day. They'll understand your friends and how you're feeling. Maybe more importantly, they'll know where you're going and anticipate your needs," he said.

Within five years, smartphones will be aware of the information on a user's laptop, desktop and tablet systems, and will use that knowledge to help guide users through their daily activities, Rattner said.

For example, a smartphone could let a user know when there's a shoe sale at a local store, notify him about traffic jams or inform him that rain is forecast.

Intel demonstrated a prototype context-aware smartphone application that guides users as they tour a new city, suggesting activities and restaurants in the neighborhoods they pass through.

– SHARON GAUDIN

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CIOs Say They're Hiring Again

After a long period of layoffs in a flagging economy, IT staffs are starting to expand as stalled projects are relaunched and workloads increase. By Patrick Thibodeau

THE TECHNOLOGY EMPLOYMENT OUTLOOK is slowly starting to improve, but the uptick in hiring has been modest and hasn't come close to making up for the IT jobs lost during the economic downturn of the past couple of years.

The latest quarterly Robert Half Technology IT Hiring Index and Skills Report projects a moderate increase in hiring during the fourth quarter. Some 1,400 CIOs from U.S. companies with 100 or more employees were surveyed for the report.

The personnel services firm said that data center executives are slowly adding new employees as work starts on projects that had been put on hold, and as IT workloads increase in general. Almost half of the survey respondents said they expect their companies will invest in IT projects in the coming months.

The optimistic note comes after a couple of very bad years for IT workers. For instance, IT vendors have shed 215,000 jobs since January 2009, according to TechAmerica Foundation, an industry group. But in the first six months of this year, technology companies added 30,200 jobs to their payrolls, whereas they shed 143,000 jobs over the same period last year.

John Longwell, vice president of research at Computer Economics Inc., pointed out that vendors are filling not just technology jobs, but also sales, marketing and distribution positions.

"Those sectors that are feeling the early stages of the recovery are hiring, but we expect IT organizations overall to continue to run very lean through the remainder of this year," Longwell said. Such firms "are not laying off workers, but for the most part, they do not have plans to hire."

Andrew Bartels, an analyst at Forrester Research Inc., said that slow-growing employment numbers among vendors and user companies reflect the state of the economy. "Companies have been very, very cautious about hiring employees, especially permanent staff," he said.

Users are investing in technology as a way of avoiding hiring, while tech vendors are growing mostly via sales of computer equipment, PCs and servers — not from the sale of people-intensive services, Bartels added.

The Robert Half survey found that CIOs are mostly seeking experts in network and Windows administration, database management and desktop support. ◆

Those sectors that are feeling the early stages of the recovery are hiring, but we expect IT organizations overall to continue to run very lean through the remainder of this year.

VICE PRESIDENT OF RESEARCH, COMPUTER ECONOMICS INC.

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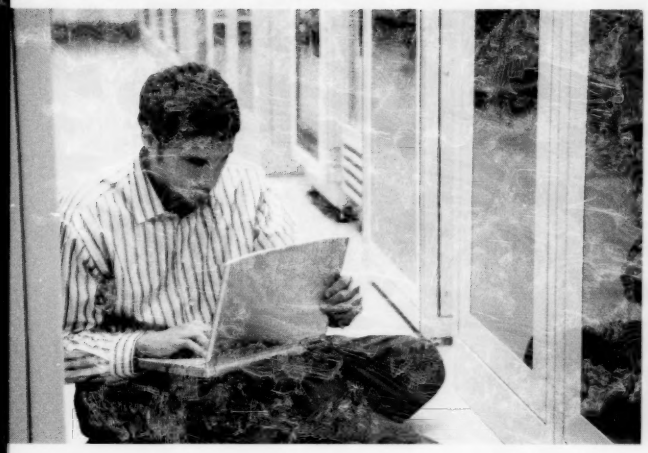

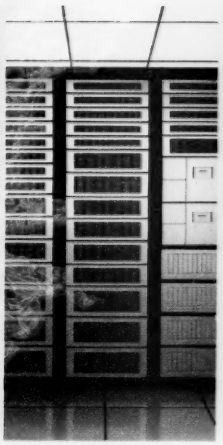

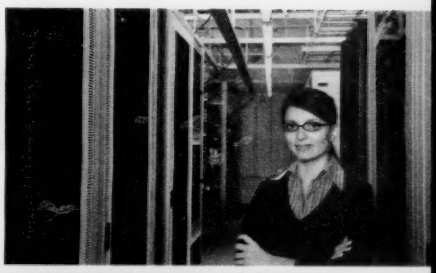

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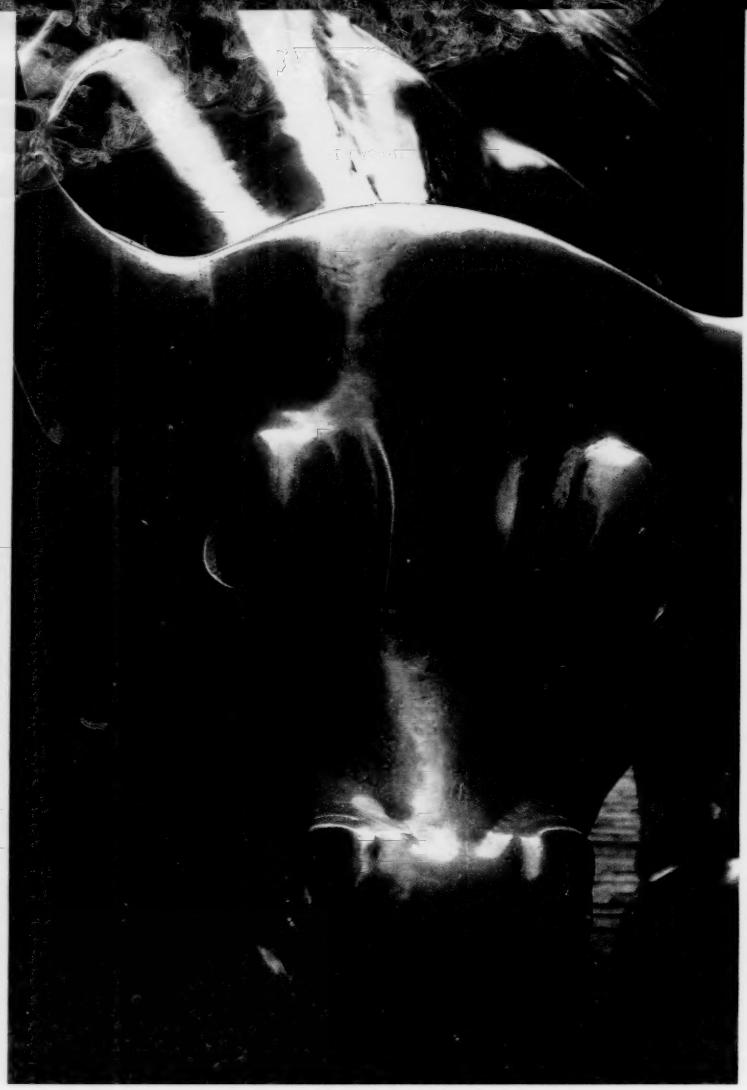

NEWS ANALYSIS

Wall Street Not Bullish on Cloud

Financial firms are trying cloud computing, but execs remain wary that key data could be exposed. By Lucas Mearian

WALL STREET FIRMS have been slow to take full advantage of the potential financial and resource savings available through cloud computing because they have security and regulatory concerns, say IT executives.

> We only use it **once in a while** for load testing.
>
> **DAN HALL,** MANAGER OF SYSTEMS DESIGN AND ENGINEERING, INTERCONTINENTALEXCHANGE INC.

For example, while Nasdaq OMX Group Inc. uses cloud computing systems within its firewall to access historical market data, IT executives there aren't yet confident that transactional data would be adequately protected in the cloud, said Nasdaq Chief Technology Officer Mats Andersson at the High Performance Computing Financial Markets conference last week in New York.

Dan Hall, manager of systems design and engineering at IntercontinentalExchange Inc., said the online commodities exchange is running Amazon.com's S3 cloud computing service only in a test environment, primarily because officials have concerns about security. "We only use it once in a while for load testing," he said.

Deutsche Bank AG has been using a hybrid private-public cloud computing infrastructure for testing and development for 18 months or so.

The limited usage has put internal critics of the technology at ease, said Tony Pizi, head of the financial services firm's next-generation infrastructure group.

Pizi noted that top executives at Deutsche Bank have been very open-minded about cloud and its benefits, but they also recognize the challenges the technology can present to large companies.

Richard Sharp, a partner in the law firm Milbank, Tweed, Hadley & McCloy LLP in New York and former head of trading practices at the U.S. Securities and Exchange Commission, warned financial services IT executives to be especially wary of regulatory requirements when considering whether to turn to cloud computing. For example, Sharp said, regulators today are applying rules based on their view that cloud computing is an outsourced service.

"The first thing regulators are going to say is, 'You're going to give up control of your IT infrastructure? We need to talk,' " he said.

In recent months, Sharp added, the SEC and the Financial Industry Regulatory Agency (FINRA) have appeared to be close to taking a position that broker-dealers can't move funds and securities through the cloud. "These are viewed as off-limits," he said. "So there's a very active debate going on, and new rules are expected shortly from FINRA that will regulate cloud computing."

Nonetheless, Pizi has high long-term hopes that use of cloud computing will spread among Wall Street firms. The technology could one day be a "game-changer," he said, adding, "I don't think anyone thinks the Internet didn't fundamentally change the world. This is of the same magnitude." ◆

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THE Grill

Steve Romeo

This IT leader drives hard bargains in the boardroom by tapping into his soft skills.

Favorite nonwork pastimes: Surfing and Bikram yoga.

The most interesting thing people don't know about you: I volunteer for a wildlife conservation group and teach animal tracking and wilderness survival to children and adults.

What's in my Netflix queue: *Into the Wild* and, for my daughter, *Marmaduke*.

What's on my iPod: Green Day, Gavin DeGraw and Black Eyed Peas.

What I'm reading: *Who's Got Your Back*, by Keith Ferrazzi

Dream dinner guests: Laird Hamilton, big-wave surfer; Bill Gates, philanthropist; Sean D. Tucker, a living legend of aviation; and Bill Clinton, former U.S. president.

PHOTOGRAPHY BY JONATHAN WOOD

CIO AND AUTHOR *Steve Romeo is a big believer in so-called soft skills. In his mind, it's the ability to listen, communicate and collaborate that makes all the difference to a CIO's career success. Sure, technical knowledge is a must. So is business knowledge and a thorough understanding of one's company and the competitive landscape in which it operates. But it's a technology professional's soft skills that will ultimately yield the biggest payoffs. At Breg Inc., Romeo says, his soft skills ultimately won him a seat on the orthopedic manufacturing company's executive steering committee. And those soft skills enabled him to persuade Breg's executives to expand into the software-as-a-service business, offering physicians a Web-based inventory management system called Vision. Three years after its launch, Vision continues to be a steady source of revenue growth for Breg. Earlier this year, Romeo authored a book titled* The New Technology Paradigm: Transforming IT With Passion, Courage, and Collaboration, *which was published by his new company, Blue Lizard Press.*

Continued on page 12

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Continued from page 10

When did it first become apparent to you that soft skills are so important for a successful career in technology? In my first job, as a help desk support administrator at a high school in Illinois. I noticed my counterparts weren't really paying attention to the people they were providing equipment to. I took that as my first lesson in IT, and I changed my style and approach. I began to listen to what users were saying, what challenges they were having, what potential capabilities I could provide through IT that would really create an impact for them.

> **"Are we a manufacturing company or are we a services company? We do it all now.**

IT people have traditionally been characterized as geeks, nerds — people with minimal social skills who prefer to work alone. How accurate or misguided is that representation today? I think this really has shifted in the last five to 10 years. I've seen a departure from that attitude, especially in the leadership role. But there's still a strong perception that IT people are those individuals who work in the back room and lack the ability to communicate.

In my book, I talk about the need [for IT professionals] to look at body language and to understand not just the verbal cues during a conversation, but also when it's appropriate to interject your ideas and when it's appropriate to just listen. I'm now a professor at California State San Marcos. The bulk of my course is on interpersonal skills. It's a three-credit course for people going into technology jobs.

As a technology professional, how did you acquire your competitive knowledge of the orthopedic manufacturing business, and how did you apply it to launch Breg's SaaS-based Vision application? First I spent a lot of time with the sales force inside our organization. I wanted to understand what they knew about our competitors and how our products matched up with products of the competition. Talking to the sales force is something that IT people typically don't do, yet it's really important to understand the competitive landscape. After that, I tried to understand our own strategic and tactical plans in terms of what we were doing this year and next year relative to IT. I then gathered the courage to approach our executive team with the idea for an inventory management solution that was so different from what our competition was doing.

That has been the biggest, most pivotal moment in my career — establishing that I can not only be the IT leader but a business leader as well. I think this is the critical role CIOs need to step into today. We need to leverage technology to drive top-line sales.

And where does Vision stand today? Has it indeed increased top-line revenue for Breg? Vision is a Web-based application that helps orthopedic clinics manage the flow of their inventory of braces, crutches and injected drugs. Traditionally, clinics have done this manually on paper, and they can lose up to $70,000 a year in inventory if they're not efficiently managing it. Our solution gives them a tool based on a computer and a handheld unit that allows them to check inventory out, assign it to a patient, print out appropriate paperwork and do all the internal reporting, and then access our business intelligence online through the Web portal. We've taken the application to the point where the orthopedic clinic needs it to run their business. We're up over $350,000 year-to-date in revenue from subscriptions to the Vision service, and we're adding about 15 new physicians a month to the platform.

How has it changed the perception of IT at Breg? We've gotten to a strategic decision point where we're investing a lot more money in the platform. We're hiring more people to develop the code in-house, we've moved Vision into the cloud, and we're actively pursuing new features that will continue to differentiate the product way beyond where our competition is. It has blurred who we are as a business. Are we a manufacturing company or are we a services company? We do it all now.

Do you foresee the day when more IT departments are revenue-generators as opposed to strictly internal service organizations? I think there's a huge potential today for IT departments to generate revenue, but it takes strategic vision, it takes execution, and it takes alignment with the business. And it all goes back to soft skills. I definitely feel the potential is there if the IT organization understands the business and can find that lever to pull that will create a product or a service that will differentiate the company from its competition. If those pieces fall into place, you've got a winner.

– *Interview by* **Julia King**

THE NEW INTELLIGENT ENTERPRISE

Does Your IT Help to Meet Customers Where They Are?

Customers are demanding to interact with companies on their own terms. Tony Branda, a business-intelligence chief at RBS Citizens, says companies can't compete without using information and analytics to be meet customer needs.

From the Editor-in-Chief, *MIT Sloan Management Review,* Michael S. Hopkins

FOR A BANK LIKE RBS CITIZENS, the pressure to become a new intelligent enterprise is most tangibly demonstrated by who *doesn't* walk in the door every day: customers. Fewer customers are physically entering branches; more of them are turning to their computers and mobile phones to make their transactions, instead.

The desire of customers to interact on multiple digital platforms—at whatever times and in whatever ways they want—presents countless organizational challenges. But because all that digital interaction yields unprecedented stores of behavior-revealing data, it also presents countless opportunities. Or it presents them, at least, if an organization is constructed to capitalize on that data deluge in the first place.

That's how Tony Branda sees it. Branda is senior vice-president and executive head of business analysis at RBS/Citizens Financial Group, where he's built a division-wide team to provide advanced analytics, information management, and business intelligence capabilities and tools to units throughout RBS Citizens. In his view, the ascendance of the digitally based consumer will mean that companies need a whole new marketing infrastructure, "one that's

Continued on page 2

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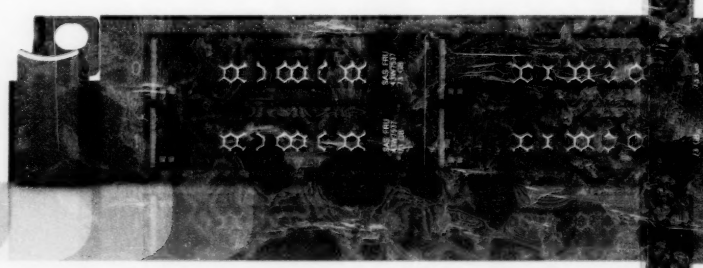

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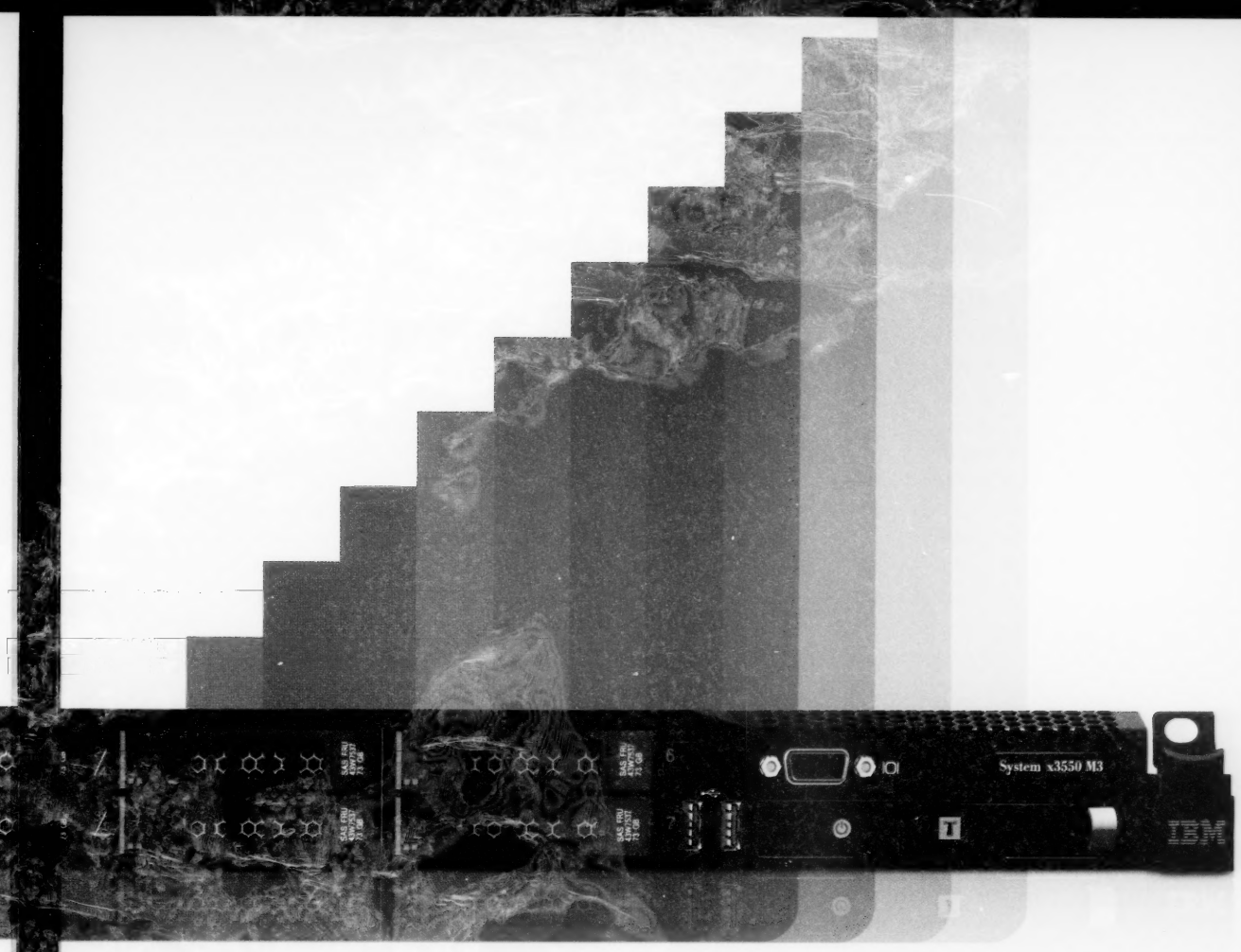

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My advice to tech managers would be to focus on collaboration with the business-side managers in order to understand the key business questions and hybrid skills required to cross the chasm between IT and business functions. —TONY BRANDA

Continued from page 1

more data driven and more data-mining-dependant than ever before," and IT executives will have to become expert at enabling it. Branda sees a chief analytics officer in every business's future, as well as a CIO for who will need to be as expert at collaboration as at technology.

Branda spoke with *MIT Sloan Management Review* Editor-in-Chief Michael S. Hopkins.

Keeping in mind your recent experience at RBS Citizens and Wells Fargo, how has the capture and use of information changed in retail banking over the past few years?

I think the main change is retail banking went from being very product-focused, and very siloed in its approach to data strategy, to more of a customer-centric approach. Retail banks are really trying to understand customers more holistically, understanding their profitability in the aggregate and not just at the product level.

Is that a consequence of a strategic shift or because it's simply easier today to look at customers holistically than it was before?

It's a little bit of both. Part of it is that many banks grew from mergers and acquisitions and some of the systems are now integrated, so that a less siloed approach is more possible.

But also it's simply more important in today's competitive, commoditized banking environment to really know your customer on all levels and to start building out customer intelligence.

Banks used to do a lot of product-pushing and offer-pushing, leveraging maybe one or two channels like the branch or heavy direct mail. Now customers want to engage us the way they want to engage us, and that's forcing a transformation.

Great phrase you just used: Now customers want to engage us the way they want to engage us. We've all learned that the Internet is a place to interact instead of just to receive information. Is that what you're talking about?

Definitely. Not all of our retail customers go into the branch every month. Customers are demanding ways to interact with us that they haven't demanded before, like wanting to check their balance on their mobile phones, wanting to get information about their accounts on their mobile phones, wanting to search for information about a product in one channel and then finish the interaction in another channel.

The question for banks becomes how you best interact with those people. How do you make sure that they're satisfied with the product set? How do you talk about new opportunities without a product-push approach? How do you understand the types of products that might meet the needs of their life situations?

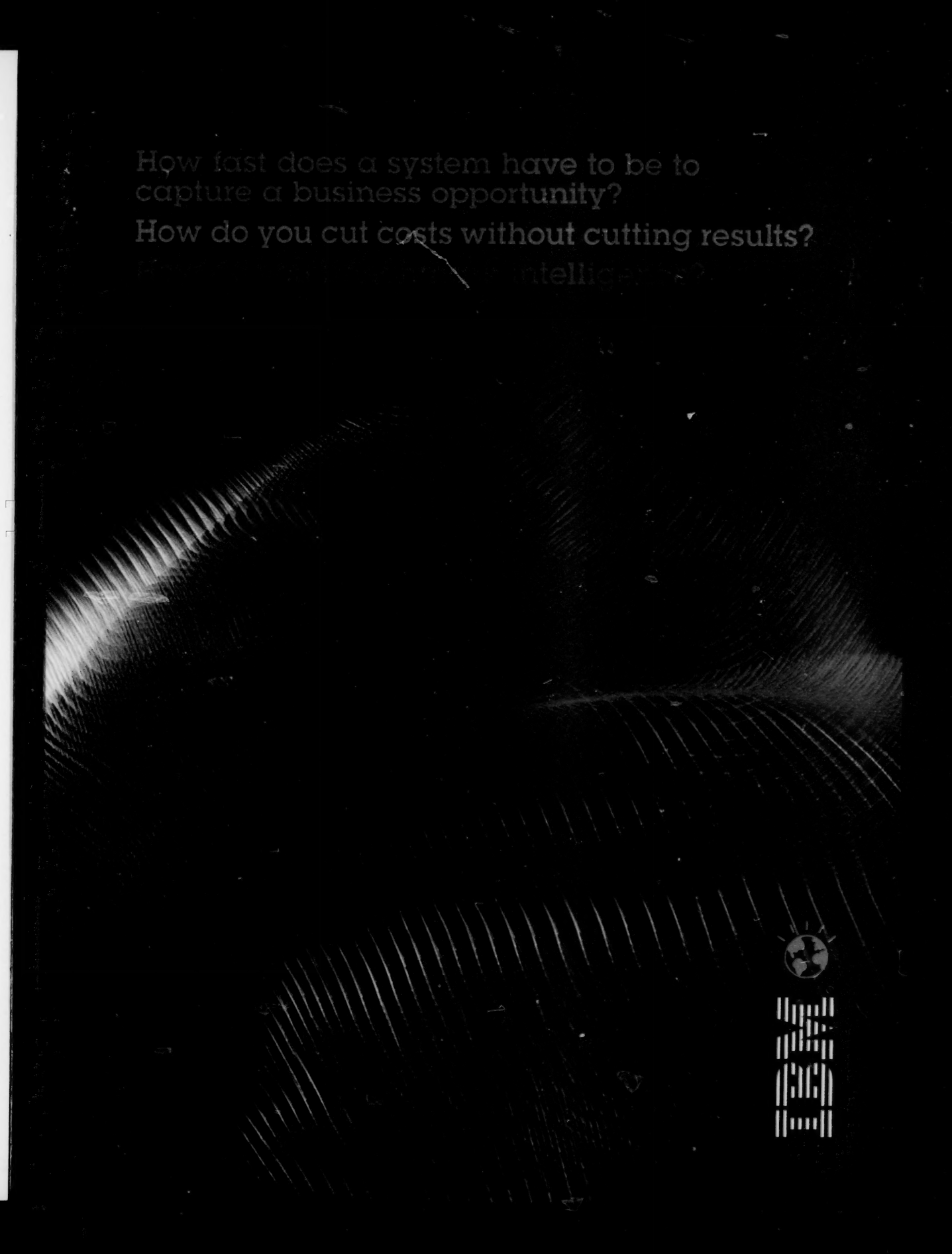
And here's where information, and the improving ability to analyze it, changes everything. It used to be that those questions would have been impossible to answer—or impossible to answer well, at least. But now we have data and analytics. Analytics has provided a deeper understanding of the customer profile and their channel usage and behaviors. And that drives enormously meaningful change.

It seems like this is a shift that's been gradual, but suddenly is very important — crucial, really.

The change is speeding up. Forrester Research has said that by 2014 there's going to be a huge shift from traditional media to interactive marketing as consumers continue to demand multiple channel options

How fast does a system have to be to capture a business opportunity?

How do you cut costs without cutting results?



for viewing advertising. The interactive space includes mobile, social, email, digital display ads and search engine marketing. There's about $25 billion spent there today or about 12% of all ad spending, and Forrester estimates it's going to go to about $55 billion or 21% of all ad spending, nearly double.

Doubling in four years?

Yes. This ties into my theme that customers are in the driver's seat and they want high-tech advertising that is dynamic and interactive, which requires companies to have business-intelligence [BI] and analytical skills to understand these innovative tech-based channels. This also in turn requires IT and BI teams to understand customer-centric architectures that help customers based on their channel preferences and channel interactions. A whole new marketing infrastructure is required for the interactive space, one that's more data driven and more data-mining-dependant than ever before.

So: comprehensive, nuanced digital interaction between companies and customers will be the way of the world. That means there'll be exponentially more data available to organizations, as well as exponentially more demand on them to use it wisely so that customers feel uniquely well served. Are businesses ready?

No. But that's changing. The whole analytics discipline is finally staring to explode and catch on, and it's becoming a more recognized subject matter within companies.

Historically, companies have buried this skill set, and analytics generally, under marketing or finance or risk, but I'm starting to see it as a whole area of practice with its own C-suite-level executives. They'll be the ones who will lead independent measurement efforts and analytical and empirical approaches to fact-based decision-making. This will really take hold when a CEO creates a position that I would call a chief analytics officer or a chief enterprise decision-management officer or a chief knowledge officer.

What will—or what should—CIOs and IT managers do during this transition to an increasingly information-and-analytics-driven organization?

My advice to tech managers would be to focus on collaboration with the business-side managers in order to understand the key business questions and hybrid skills required to cross the chasm between IT and business functions. In addition, since the nature of analytical and BI development is iterative, develop flexible dynamic teams to help the business answer high impact questions quickly. Where possible, align IT and line of business BI teams with the businesses that they serve to maximize learning.

What are the barriers to adopting that kind of information-based management? How hard is it to make the business case to invest in the IT infrastructure? Are the benefits easy to quantify?

The challenge is that it's easy to just see the expense side of investing in these capabilities. But some of this is art and some of this is science. It's hard to put an ROI on a large database investment, for example. But CFOs need to figure out how to measure the impact of the leverage we're getting. We need to figure out how analytics will, for example, help increase sales in customer service if we're cross-selling. Analytics can enable us to prioritize staffing models for loan officers when they're calling back customers who said they were interested in a mortgage. But there's still a gap in setting up the pro forma to measure the benefits. Whereas the costs of systems and analysts are easy to count. And the expense precedes the benefit, no matter how you do it.

What else makes it hard for organizations to adopt analytics-driven management?

Organizational structures themselves create barriers. Some companies have a cultural emphasis on teamwork and matrix management, others don't. The use of analytics and enterprise-wide information is more

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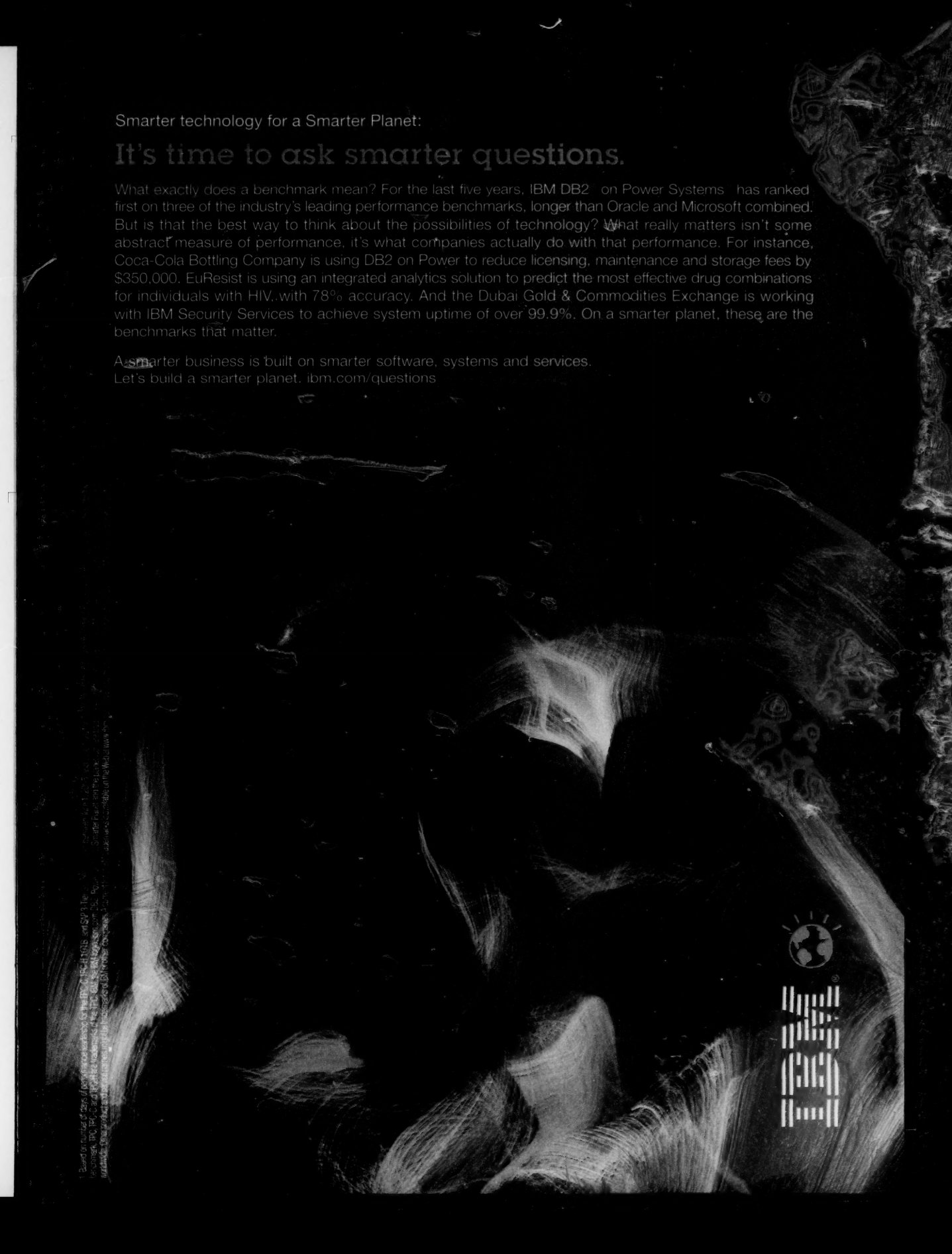
Smarter technology for a Smarter Planet:
It's time to ask smarter questions.
What exactly does a benchmark mean? For the last five years, IBM DB2 on Power Systems has ranked first on three of the industry's leading performance benchmarks, longer than Oracle and Microsoft combined. But is that the best way to think about the possibilities of technology? What really matters isn't some abstract measure of performance, it's what companies actually do with that performance. For instance, Coca-Cola Bottling Company is using DB2 on Power to reduce licensing, maintenance and storage fees by $350,000. EuResist is using an integrated analytics solution to predict the most effective drug combinations for individuals with HIV, with 78% accuracy. And the Dubai Gold & Commodities Exchange is working with IBM Security Services to achieve system uptime of over 99.9%. On a smarter planet, these are the benchmarks that matter.
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Continued from page 3

likely to succeed in companies with cross-functional, cross-silo players.

Optimization modeling is a great example. Optimization modeling is a predictive, analytical approach to engaging customers and understanding how to make tradeoffs between business goals and customer goals. To really invest in optimization is a few million dollars, at minimum—in the people, the processes and the technologies to drive it. So there has to be both common analytical infrastructure and tools as well a common way of working across business lines to test and learn new approaches. Also, companies with size and scale and more well-defined business processes tend to do better at embedding analytics to provide business lift.

You keep coming back to a theme that maybe we could call "integration and collaboration." The information an organization collects—and the ability to analyze it—has to be integrated across all silos and from point-of-use up to enterprise level. And individuals have to be able to collaborate across boundaries both inside their organization and even outside—such as with customers. What are the most important things that IT leaders and IT organizations can do to enable integration and collaboration to succeed?

Take a look at the organizational model and skills within IT to determine if the customer facing IT leaders and managers have a business perspective and have hybrid skills. For example, do your data strategists and solutions design experts ask their business counterparts: "What questions are you trying to answer?" rather than pushing a technology approach that may minimize or over-standardize the solution to fit an IT manufacturing process. Start with the problem, then develop solutions based on collaborative business requirements. Ensure that collaboration and influence-management skills are core competencies of your next generation of IT and BI leaders.

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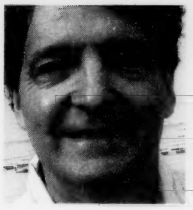

PRESTON GRALLA

Redefining 'Responsible'

IT vendors are facing ethical controversies over actions they take around the world, from Russia to China to Africa.

DO TECHNOLOGY VENDORS have any responsibility other than to make good products, offer good services and earn sizable profits? That question is being asked with increasing frequency these days, as vendors face ethical controversies over actions they take or don't take around the world — and the controversies show no signs of abating. The biggest names in IT are involved, including Apple, Microsoft and Google. And whether you know it or not, you're involved as well.

One of those controversies recently came to light in a *New York Times* story that charged that Microsoft is helping the authoritarian Russian regime crack down on dissidents and opposition newspapers under the guise of combatting software piracy. Russian police conduct raids, claiming to look for pirated Microsoft software, remove computers whether they contain illicit software or not, and then prosecute the computers' users.

The article painted a dark portrait of Microsoft's role in aiding the authorities, saying that Microsoft lawyers "have staunchly backed the police" and even aided in the prosecutions. Microsoft initially denied the charges. Then, to its credit, it said it was hiring an international law firm to investigate the charges. It also changed licensing rules to make it more difficult for the Russian police to conduct the raids.

Microsoft, though, still cooperates with Chinese authorities to censor the Web for those who use its Bing search engine. Apple cooperates as well; its iTunes service bans people in China from downloading certain apps that mention the Dalai Lama or Uighur activist Rebiya Kadeer.

Google, of course, took a stand against censorship in China and refused to censor its search results. It has taken a financial hit for this, but it hasn't backed down.

In the Democratic Republic of Congo, the world's most brutal war is being financed by sales of so-called conflict minerals such as tantalum, tungsten, tin and gold, which are used to manufacture consumer electronics, including laptops and cell phones. Some groups have called on electronics vendors not to buy those minerals. And some companies, such as Motorola and Intel, are trying to trace the origins of minerals they purchase, in an effort to ensure that they don't buy conflict minerals. But not all companies are following suit. (You can get more details from groups such as Raise Hope for Congo and Enough.)

What are companies' responsibilities when it comes to these kinds of moral issues? Some things transcend profit, and companies need to understand that. They might even find that good morals make for good business. Consumers are far more well informed about products and the companies that make them than ever before, and they're taking action based on that information. They're starting to take into account not just product specs, but also the behavior of the companies that make those products.

What to Do

This is where you come in. These issues aren't going away. Technology has become enmeshed in the culture, politics and economies of every country on the planet. And you're not an innocent bystander. You buy these companies' products or use their services, and so ultimately you support them. If you take companies' behavior around the world into account when making buying decisions — and if you let them know that — you'll help make sure that you and your employer don't inadvertently help fund the most brutal war on the planet or crack down on dissidents. ◆

Preston Gralla is a contributing editor for *Computerworld.com* and the author of more than 35 books, including *How the Internet Works* (Que, 2006).

ARCH
LENGTH

Cutting Your Storage Footprint

BY ROBERT L. SCHEIER

New techniques can help, but **make sure the shoe still fits** by balancing cost, speed and access.

WITH THE ECONOMY STILL SHAKY and the need for storage exploding, almost every storage vendor claims it can reduce the amount of data you must store. Trimming your data footprint not only cuts costs for hardware, software, power and data center space, but also eases the strain on networks and backup windows.

But how do you know which technique to use? First you have to understand how your business uses data and determine when the cost savings of data reduction are worth the resulting drop in performance.

The technique that's best for you depends not so much on the industry you're in as it does on the type of data you store. For example, deduplication often

JOHN WEBER ILLUSTRATION

Dedupe and Compression: Better Together?

SOME VENDORS OFFER, or will offer, both deduplication and compression. Others, such as Ocarina, decode already-compressed files before optimizing them. Randy Chalfant, vice president of storage strategy at Nexsan, argues that data should be compressed at the file or operating system level and deduplicated on the storage target. Cloud-based deduplication and compression vendor Asigra Inc. first compresses and then deduplicates data, and stores only changes made to it.

The choice of whether, when and in what order to use both compression and deduplication depends on factors such as whether compression will make it easier or harder for the deduplication software to scan for redundancies, what tier (primary vs. secondary) you're looking to optimize, and how quickly the product can return data to a usable form when needed.

– ROBERT L. SCHEIER

doesn't deliver significant savings for X-rays, engineering test data, video or music. But it can significantly reduce the cost of backing up virtual machines used as servers, for example.

Here are five techniques to help reduce your stored-data volume.

1. Deduplication

Deduplication — the process of finding and eliminating duplicate pieces of data stored in different data sets — can reduce storage needs up to 90%. For example, through deduplication, you could ensure that you store only one copy of an attachment that was sent to hundreds of employees. Deduplication has become almost a requirement for backup, archiving and just about any form of secondary storage where speed of access is less important than reducing the data footprint.

Chris Watkis, IT director at health care advertising and marketing firm Grey Healthcare Group, is seeing reduction ratios as high as 72:1 for backup data, thanks to a deduplication process that uses FalconStor Software Inc.'s Virtual Tape Library storage appliance. And cloud storage services vendor i365 is achieving 30:1 to 50:1 reductions in data on a mixed workload of Microsoft Exchange, SharePoint, SQL Server and VMware virtual machine files, says Chief Technology Officer David Allen.

Data can be deduped at the file or block level, with different products able to examine blocks of varying sizes. In most cases, the more fine-grained assessment a system can do, the greater the space savings. But fine-grained deduplication might take longer and therefore slow data access speeds.

Deduplication can be done preprocessing, or inline, as the data is being written to its target; or postprocessing, after the data has been stored on its target. Postprocessing is best if it's critical to meet backup windows with fast data movement, says Greg Schulz, senior analyst at The Server and StorageIO Group. But consider preprocessing if you have "time to burn" and need to reduce costs, he says.

While inline deduplication can cut the amount of data stored by a ratio of about 20:1, it isn't scalable, and it can hurt performance and force users to buy more servers to perform the deduplication, critics say. On the other hand, Schulz says that postprocessing deduplication requires more storage as a buffer, making that space unavailable for other uses.

For customers with multiple servers or storage platforms, enterprisewide deduplication saves money by eliminating duplicate copies of data stored on the various platforms. This is critical because most organizations create as many as 15 copies of the same data for use by applications such as data mining, ERP and customer relationship management systems, says Randy Chalfant, vice president of storage strategy at disk-based storage vendor Nexsan Corp. Users might also want to consider a single deduplication system to make it easier for any application or user to "rehydrate" data (return it to its original form) as needed and avoid incompatibilities among multiple systems.

Schulz says primary deduplication products could perform in preprocessing mode until a certain performance threshold is hit, then switch to postprocessing.

Another option, policy-based deduplication, allows storage managers to choose which files should undergo deduplication, based on their size, importance or other criteria.

SFL Data, which gathers, stores, indexes, searches and provides data for companies and law firms involved in litigation, has found a balance between performance and data reduction. It's deploying Ocarina Networks' 2400 Storage Optimizer for "near-online" storage of compressed and deduplicated files on a BlueArc Mercury 50 cluster that scales up to 2 petabytes of usable capacity, rehydrating those files as users require them.

"Rehydrating the files slows access time a bit, but it's far better than telling customers they have to wait two days" to access those files, says SFL's technical director, Ruth Townsend, noting that the company gets as much as 50% space savings through deduplication and file compression.

2. Compression

Probably the most well-known data reduction technology, compression is the process of finding and

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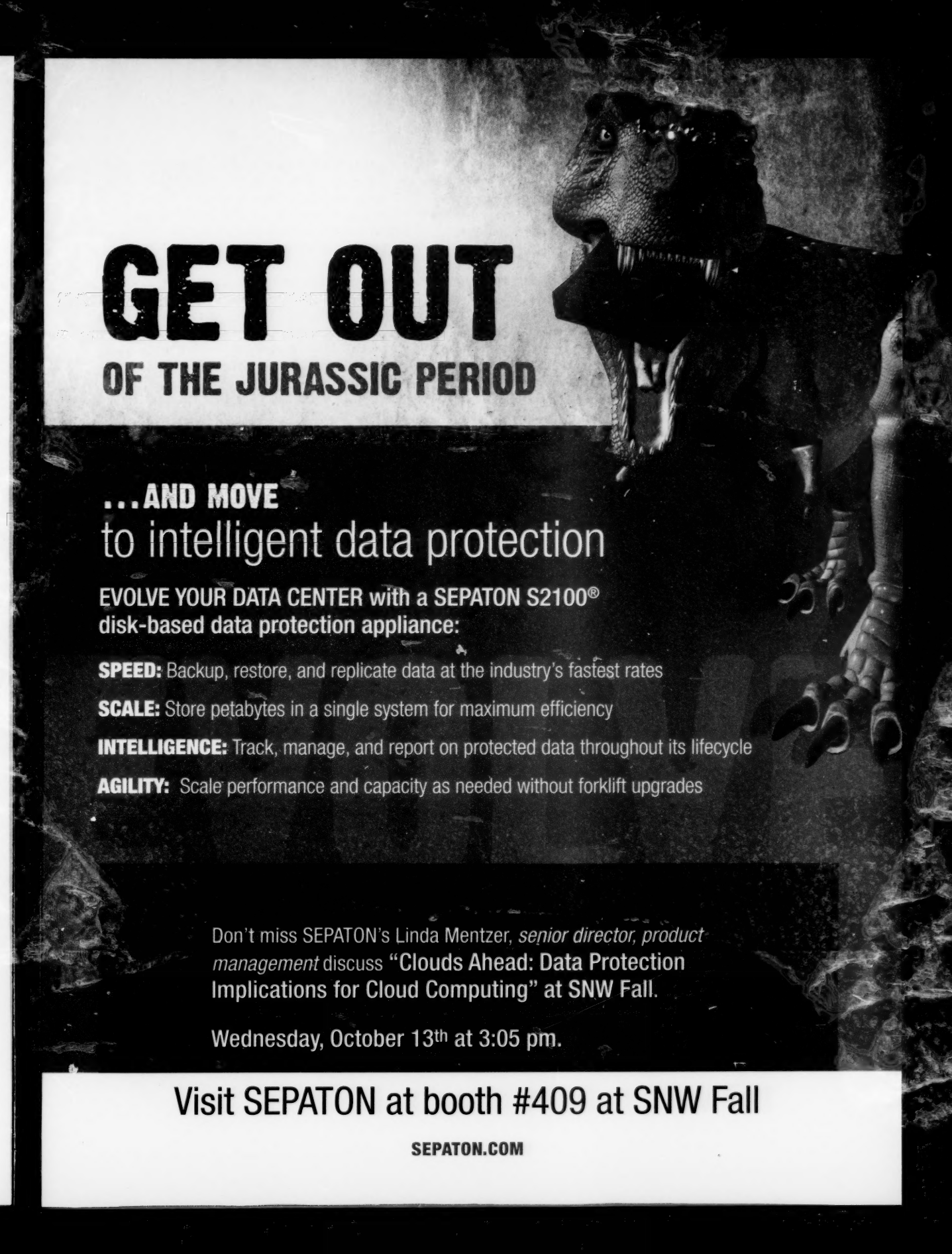
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Continued from page 24

eliminating repeated patterns of bytes. It works well with databases, e-mail and files, but it's less effective for images. It's included in some storage systems, but you can also find stand-alone compression applications or appliances.

Real-time compression that doesn't delay access or slow performance by requiring data to be decompressed before it's modified or read is suitable for online applications like databases and online transaction processing, says Schulz. The computing power within modern multicore processors also makes server-based compression an option for some environments, he adds.

Allen of i365 says the benefits of compression vary. It can reduce data by ratios of 6:1 or more for SQL databases, but for file servers the ratios are closer to 2:1. According to Fadi Albatal, vice president of marketing at FalconStor, compression is most effective on backup, secondary or tertiary storage, where it can reduce storage needs by ratios of 2:1 to 4:1 for "highly active" database or e-mail applications. When information management services firm Iron Mountain Inc. archives applications, compression and deduplication reduce storage by as much as 80%, says T.M. Ravi, Iron Mountain's chief marketing officer.

IBM focused attention on compression of primary storage with its acquisition of Storwize, whose appliance writes compressed files back to the NAS device on which they originated or to another tier of storage. Storwize is beta-testing a block-based appliance, says Doug Balog, vice president of IBM storage.

Files compressed by Microsoft Office applications or popular image formats such as JPEG can't be reduced with many common compression techniques or may even increase in size. Neuxpower Solutions Ltd. claims that its software can shrink Office and JPEG files by as much as 95% without loss of image quality by removing unnecessary information such as metadata or details that can't be seen unless the image is enlarged. Ocarina, which is being acquired by Dell, says its products offer similar capabilities because they use multiple optimization algorithms tuned for different types of content, and they have the ability to test and choose among various compression methods for the best runtime efficiency.

Deduplication and compression are complementary. "Use compression when the primary focus is on speed, performance, transfer rates. Use deduplication where there is a high degree of redundant data and you want higher space savings," says Schulz.

3. Policy-Based Tiering

Policy-based tiering is the process of moving data to different classes of storage based on criteria such as its age, how often it is accessed or the speed at which it must be available (see "The Politics of Storage," page 30). Unless the policy calls for the outright deletion of unneeded data, this technique won't reduce your overall storage needs, but it can trim costs by moving some data to less expensive, but slower, media.

Vendors in this market include Hewlett-Packard Co., which offers built-in policy management and automated file migration in its StorageWorks X9000, and DataGlobal GmbH, which says that its unified storage and information management software enables customers to analyze and manage unstructured files and other information and thereby reduce their storage needs by 60% to 70% for e-mail and about 20% for file servers.

Other products with tiering capabilities include Storage Center 5 from Compellent Technologies, HotZone and SafeCache from FalconStor, Policy Advisor from 3Par, EMC's FAST and F5 Networks' ARX series of file virtualization appliances.

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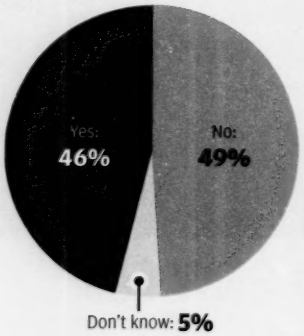
Set to the Side

Has your organization migrated its stored data in the past 12 months to reduce volume and/or save money?



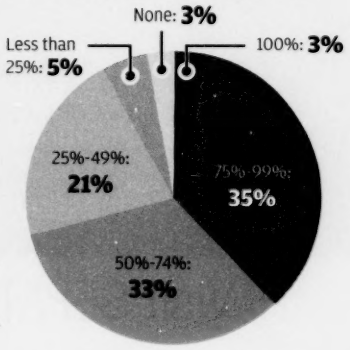
Data Squeeze

The most popular storage management techniques:

1	Compression technologies
2	E-mail archiving
3	Storage virtualization
4	Deduplication
5	Thin provisioning
6	Policy-based storage
7	Dynamic tiering
8	Cloud computing

Efficiency Edge

Percentage of your current storage capacity being utilized for stored data:



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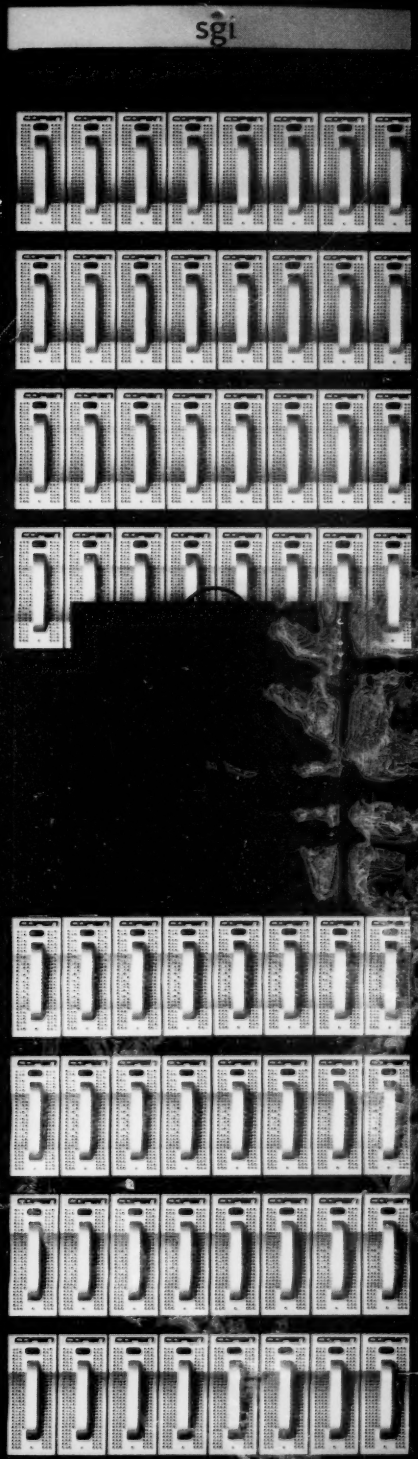

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Which Dedupe Is Right for You?

THERE ARE DEDUPLICATION SYSTEMS to meet many different needs, depending the organization's reduction goals and system setup. Here's a sampling:

- **Nexsan provides postprocessing deduplication for primary and archive data with its Assureon system, and for backup data with its DeDupe SG offering.** DeDupe SG is based on FalconStor's deduplication software engine File-interface Deduplication System, or FDS. Combined with single instancing of data, this provides typical reduction ratios from 1:5 to 1:15, says Randy Chalfant, vice president of storage strategy at Nexsan.
- **EMC Data Domain deduplication storage systems are for customers who want to keep their existing backup software but move from tape to disk for backup,** says Shane Jackson, senior director of product marketing for EMC's backup recovery systems division. Data Domain supports both structured and unstructured data, with deduplication of various lengths of blocks, achieving reductions of 10:1 to 30:1, he says. EMC's Avamar provides source-based backup software with global deduplication, providing 30:1 to 40:1 reductions, says Philip Fote, marketing manager for the backup recovery systems division.
- **Ocarina provides sub-file-level deduplication and compression of unstructured data.** Its storage optimizers read data from network-attached storage, deduplicate it, compress it and write the optimized files on either the original NAS or a different storage tier. It optimizes the layout based on characteristics such as block sizes, caching strategies and metadata layout for each storage platform, says Greg Schulz, senior analyst at The Server and StorageIO Group. Ocarina is well suited for unstructured data that may not be "handled as efficiently by dedupe alone," says Schulz. Ocarina also resells its technology to vendors such as BlueArc Corp.
- **HP's StoreOnce deduplication software currently runs on HP StorageWorks D2D Backup Systems and compresses data before deduplication, for reductions of up to 20:1.** By using a single deduplication engine across the enterprise, it can avoid the problems caused by using multiple deduplication products, says Lee Johns, marketing director for unified storage products in HP's StorageWorks division. He says HP also plans to use StoreOnce to reduce primary storage in high-availability server clusters.
- **Symantec Corp.'s forthcoming VirtualStore is designed to reduce storage requirements for virtual machines and the data associated with them by 80% – especially for virtual desktop implementations.** Among other things, it updates only the changes between the "parent" virtual machine and any clones and provides thin provisioning and tiering. VirtualStore will be available in November; future releases will have deduplication capabilities, according to Symantec.

– ROBERT L. SCHEIER

Continued from page 26

4. Storage Virtualization

As is the case with server virtualization, storage virtualization involves "abstracting" multiple storage devices into a single pool of storage, allowing administrators to move data among tiers as needed. Many experts view it as an enabling technology rather than a data reducer, per se, but others see a more direct connection to data reduction.

Actifio Inc.'s data management systems use virtualization to eliminate the need for multiple applications for functions such as backups and disaster recovery. Its appliances let customers choose service-level agreements governing the management of various data sets from a series of templates.

With this method, the proper management policies are then applied to a single copy of the data, defining where, for example, it is stored and how it is deduplicated during functions such as backup and replication. Company co-founder and CEO Ash Ashutosh claims that Actifio can cut storage needs 75% to 90%.

5. Thin provisioning

Thin provisioning means setting up an application server to use a certain amount of space on a drive, but not using that space until it is actually needed. As with policy-based storage, this technique doesn't cut the total data footprint but delays the need to buy more drives until absolutely necessary.

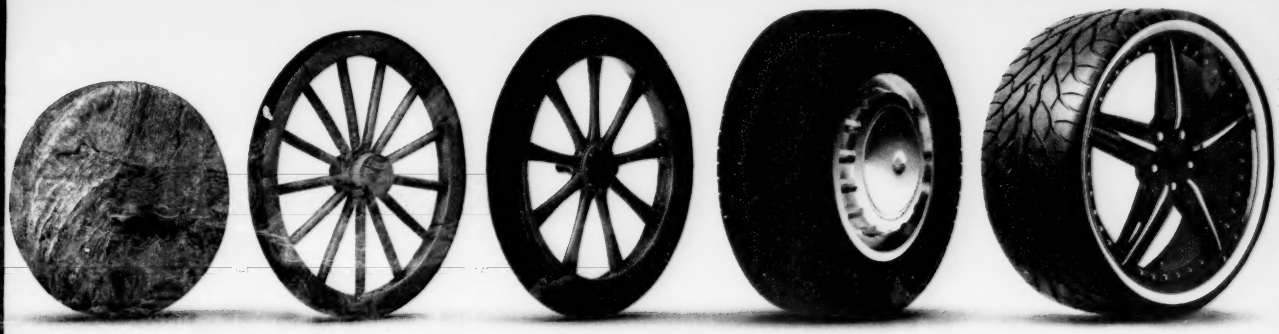
If storage needs increase rapidly, you must "react very, very quickly" to ensure that you have enough physical storage, says Allen. The more unpredictable your needs, the better measurement and management tools you need if you adopt thin provisioning. Schulz advises looking for products that identify both the data and applications users need to track, and that monitor not only space usage but read/write operations to prevent bottlenecks.

One of the vendors in this market is IBM, which has extended thin provisioning "into all our storage controllers," says Balog. HP, which provides thin provisioning on its StorageWorks P4000 SANs, is set to acquire 3Par, which guarantees that its Utility Storage product will reduce customers' storage needs by 50%. Nexsan provides thin provisioning with its SATABeast arrays.

Before choosing a data reduction strategy, set policies to help make tough choices about when to pay for performance and when to save money by cutting your data footprint. Don't focus only on reduction ratios, Schulz says, but remember that you might get more savings with a lower reduction rate on a larger data set.

And don't be confused by vendor terminology. Compression, data deduplication, "change-only" backups and single instancing are all different ways of reducing redundant data. When in doubt, choose your storage reduction tools based on their business benefits and a detailed analysis of your data. ◆

Scheier *is a freelance writer in Swampscott, Mass. Contact him at bob@scheierassociates.com.*



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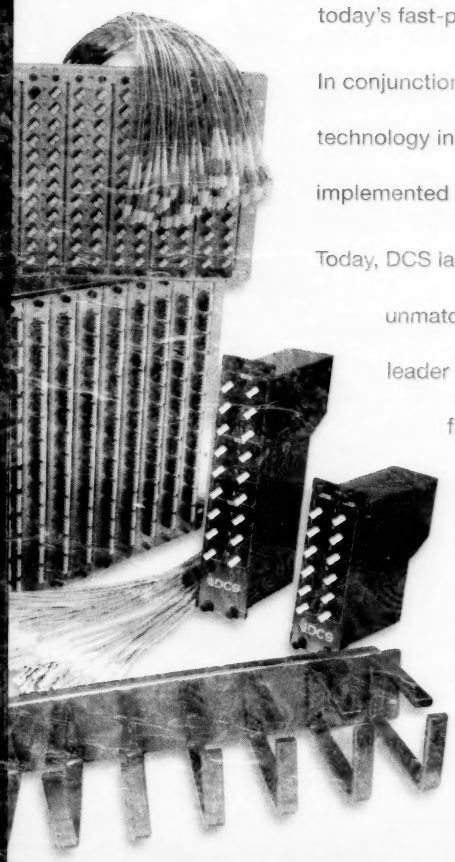

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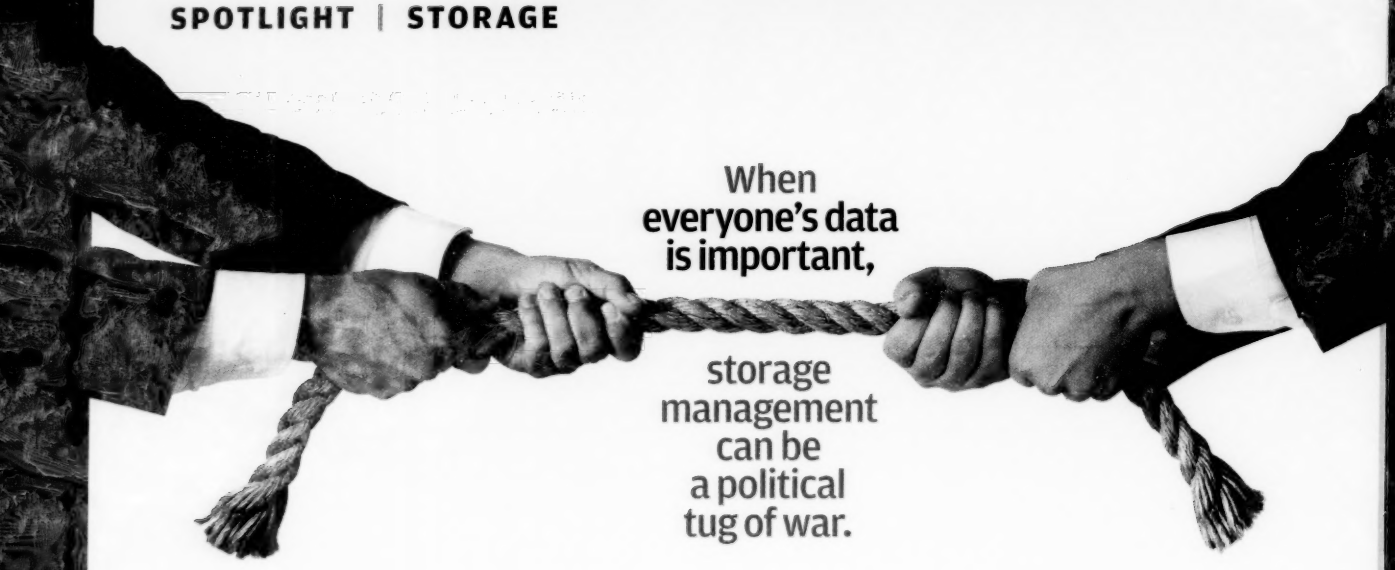


When everyone's data is important, storage management can be a political tug of war.

The Politics of Storage

BY BETH SCHULTZ

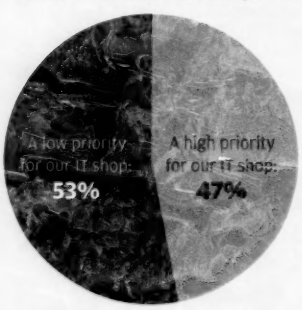
LIKE FACEBOOK FOR EMPLOYEE USE and iPhones in business, data storage policy is a topic that can be a political hot potato within corporate walls.

Implementing policy-based storage management can be so contentious, in fact, that at many companies, it quickly turns into a nonstarter (see charts, below). Rather than haggling with the business about where data gets stored and for how long, IT simply places all data in a single tier — that which is most satisfactory for the most critical applications. The result is the stereotypical high-cost, overprovisioned storage-area network.

Andrew Reichman, an analyst at Forrester Research Inc., calls this the "highest common denomi-

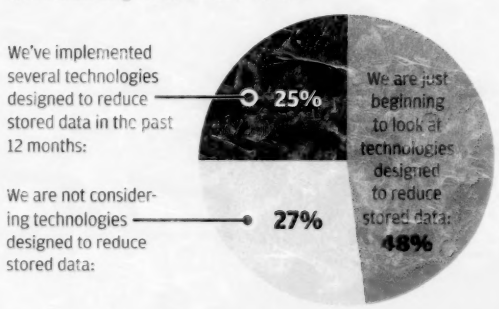
Split Decision

Reducing our organization's stored data volume over the next two years is:



Slow Saturation

To what extent is your organization moving toward reducing its stored-data volume?


We've implemented several technologies designed to reduce stored data in the past 12 months: 25%
We are not considering technologies designed to reduce stored data: 27%
We are just beginning to look at technologies designed to reduce stored data: 48%

SOURCE: EXCLUSIVE *COMPUTERWORLD* SURVEY OF 97 IT PROFESSIONALS, AUGUST 2010

nator" approach to policy-based storage management.

"Companies really struggle with how to do policy-based storage management right, so in some cases they do nothing. They just don't tier at all," he says.

"Everybody's application is performance-sensitive and important, or you wouldn't be deploying or supporting it. What's needed is the relativity — how much performance capability is truly needed for this important application to work effectively?" Reichman adds.

"The challenge isn't with the cost of the hardware or the software or in the tools for moving the data," agrees Greg Schulz, an analyst at The Server and StorageIO Group. "It's in getting somebody to define and sign off on what to move, when to move it, how long to keep it, how many copies to keep, when to delete it, and how to handle the deletion. This takes someone who has a business-value understanding of the applications and who can interface with technologists to bring all this together, and who also can get approval from the business that this is what can be done, this is what needs to be done, and also, by the way, will indemnify it."

And when dealing with data files, storage policies are only as good as the level of user compliance, adds Kerry Sylvester, IT director at WaterFurnace International Inc., a manufacturer of heat pumps.

At the Fort Wayne, Ind., company, Sylvester uses FalconStor Software's virtualization technology to move data across its storage tiers, but users don't always store the data as directed, he says. "Some people like to hang on to stuff, and habits are hard to break. To make policy-based storage work, you need your users storing their documents to the right places," says Sylvester.

If politics and culture aren't distracting enough, a lack of knowledge often stands in the way of good policy-based storage management, Reichman adds.

"Performance analytics in storage is pretty binary and often trial-and-error-based," he explains. "So there's often no way to make a confident decision and say, 'This will perform completely effectively on a lower class of performance system.' So a lot of it is guesswork — and that means there'll be mistakes sometimes, and as a result IT alienates the user community."

But the politics of storage are starting to change with advanced automated data tiering. Available from companies like 3Par (which has agreed to be acquired by Hewlett-Packard), Compellent Technologies and EMC, this technology monitors how data is being used at the block level, determines which data should be on which type of storage, and then moves it there.

Reducing the Complexity

With automated tiering, enterprises still set policies for applications or groups of applications. They can stipulate, for example, that the Oracle production database should run on Tier 1 solid-state and Tier 2 Serial ATA drives. But then they can step back and let the system do its thing, rather than manually moving the data between those tiers as needed.

"Before we went to Compellent-based policy management in the SAN, policy-based storage meant a laundry list of highly technical configurations that needed monitoring daily, if not hourly, and constant planning," says Jack Rahner, assistant vice president of IT operations at AlphaStaff Group Inc., a Fort Lauderdale, Fla.-based employer of record for thousands of clients' professional workers around the globe.

"Policy-based storage meant being in touch with the business and knowing what kinds of activities were coming up. It all revolved around tailoring the current storage and the amount of storage we'd be expecting in read/write fashion for each customer," he explains. "It was very complex, and we never seemed to get it quite right, and so what we ended up with was a senior engineer working full time to manage and monitor a card game of storage."

Since deploying Compellent's Fluid Data tiering technology a year ago, the rules have changed and the complexity has disappeared, Rahner says.

Some people like to hang on to stuff, and habits are hard to break. To make policy-based storage work, you need your users storing their documents to the right places.

KERRY SYLVESTER, IT DIRECTOR, WATERFURNACE INTERNATIONAL INC.

At AlphaStaff, which currently has hundreds of terabytes of stored data on its Compellent SAN, the business owners still give IT a heads-up about impending activity, such as open enrollment or tax filing periods, Rahner says. "But that's really more because that's what they've always done," he adds. "So my interaction with the business is still the same, but then we don't have to scramble and whiteboard for three days trying to figure where we're going to put the data."

Of course, you do have to convince the top executives that automated tiering is the way to go. For Rahner, selling the idea to the CFO and CEO was no biggie, but telling the CTO that he wanted to move all the company's production storage to a new vendor — "now that's a tough sell for anybody," he says.

So in what some may consider overkill, Rahner essentially brought his SAN and ERP data to Compellent's facilities and tested the setup for two months. Tons of metrics later, he was able to make his case easily, he says, noting, "You just can't argue with cheaper, better, faster." ◆

Schultz *is a longtime IT editor and writer in Chicago. You can reach her at bschultz5824@gmail.com.*

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UNTANGLING YOUR DATA

MDM PROJECTS TURN A *hodgepodge* OF POORLY MANAGED DATA INTO SOMETHING THAT *truly helps* THE BUSINESS.

BY MARY BRANDEL

MANY OF TODAY'S cost-conscious food shoppers buy store brands — like Costco's Kirkland or Stop & Shop's Nature's Promise — rather than national brands. Industry figures show that nearly 1 out of 4 products bought in U.S. supermarkets last year was a private-label brand.

For Daymon Worldwide Inc., which helps retailers market private brands, the industry boom required a major overhaul of IT and business processes to support 5,000-plus suppliers, over 120 retailers and 500,000 products. "We've had to quickly change to stay ahead of the market and keep up with growth," says Abhishak Beniwal, senior director of IT.

A key step was to get control of the company's sprawling collection of product and supplier data, by using a set of processes

and technologies called master data management (MDM).

Before Daymon began its MDM initiative last year, its product and supplier information was maintained by numerous people in 200 offices around the world, and each change had to be made directly in every line-of-business application.

Today, one centralized group validates the data, which flows to an MDM system from Kalido Ltd. The data is stored in an enterprise data warehouse and is routed to the appropriate line-of-business applications. Invalid or incomplete data is routed to the right individual in the business who can correct it, to maintain data quality.

Now, when a new product is introduced or new packaging is requested, the change is "a simple business exercise" that can be accomplished without touching operational systems, Beniwal says. Furthermore, the cost of managing supplier information has decreased, and Daymon can move into the types of advanced analytics that will enable it to capitalize on future growth opportunities in the private brand business, he says.

So, What Is MDM?

As companies such as Daymon tackle today's business challenges, many are facing the hard truth that they need to go back to the mountains of poorly managed customer, product, supplier and employee data that has accumulated over the years and make some sense of it. That's where MDM comes in.

In a recent survey of 131 companies by analyst firm Information Difference Ltd., 42% of respondents said they had implemented or were in the process of implementing an MDM project. Nearly one-third reported having deployed two or more MDM programs. Just 22% said they had no plans to implement MDM.

But despite their popularity, MDM projects are also renowned for billowing out of scope, exhausting budgets and running out of gas. Often, the very people who would benefit from them see little connection between the hard work involved in making MDM succeed and the results these new systems and processes are supposed to yield.

And no wonder: Enterprise MDM initiatives cost in the millions of dollars for most companies, Beniwal says. They require months, if not years, of organized and persistent effort on the part of cross-functional teams and should really be considered more of a journey than a project with an actual end.

For that reason, no one should begin an MDM effort without support from the very top of the

MDM Requires Cultural Changes

IMPLEMENTERS ARE quick to say that master data management initiatives are only as good as the processes and people surrounding them. To that end, Rick Biederstadt, divisional vice president of enterprise information strategy and management at Health Care Service Corp. (HCSC), took steps to ensure that momentum would continue on the organization's MDM initiative.

The health insurer turned to MDM primarily because it wanted to start viewing its 12.5 million members as individuals, rather than as a big collection of members, and to lower health care costs by supporting each individual's wellness. That goal required creating a unique identifier for each member and collecting profile data in one place, to enable a 360-degree view of each person's interactions with the health care system, Biederstadt says.

He chose MDM technology from IBM for the project, which began in early 2009. By July 2009, HCSC had completed its first data load and established governance processes. By late 2009, the MDM system had gone live and, according to Biederstadt, was generating business benefits.

For instance, obtaining a single view of a member led to better retention and improved customer satisfaction scores. The improvements in data management also reduced the organization's exposure to regulatory compliance penalties.

These successes would have been impossible, Biederstadt says, if the overall culture at HCSC hadn't also undergone a transformation. As part of the MDM effort, employees were encouraged to embrace accurate customer data as an important corporate goal.

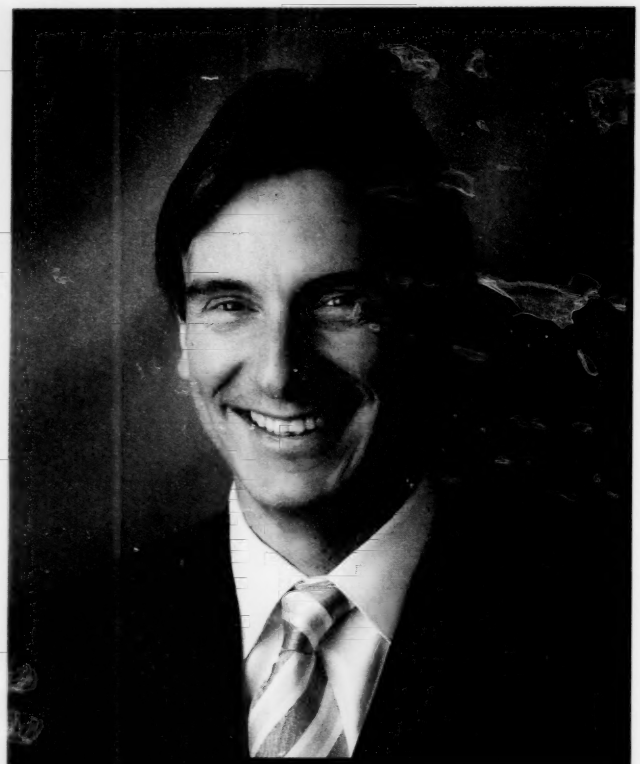
The key was changing the mind-set of employees about who owns the data, a change that requires executive sponsorship, careful governance and continual communication. HCSC even had cards printed with a capital "E," for "Enterprise," and asked employees to affix them to the back of their ID badges. This was meant to remind them that data is an enterprise asset, Biederstadt says.

"When people started to think locally or divisionally about data, we asked them to turn their badge around," he explains. "Anyone could hold up their E card and start thinking of data belonging to the enterprise again."

— MARY BRANDEL

"If we say 'MDM' to our senior team, their eyes just glaze over. We just talk about how the products need to be managed.

ABHISHAK BENIWAL, SENIOR DIRECTOR OF IT, DAYMON WORLDWIDE INC.



The key to MDM success is to "focus on a specific business need," says Marcelo De Santis, director of enterprise master data at Kraft.

organization, defined metrics of success and a very specific vision of the business goals.

Trying to define MDM tends to trigger arguments among vendors and analysts, but Gartner Inc. analyst Bill Swanton says it can be explained simply. "MDM is a discipline and a process for keeping data accurate and consistent enough so that your applications perform the way you need them to in order to run the business," he says.

Beniwal emphasizes that MDM is a business process for managing information about core business entities such as "customer," "supplier," "products" and "employee." He maintains that MDM combines people, processes and technology to create and maintain a clean, consistent "single version of the truth" that can be used by all business applications within the organization.

While MDM is all too often seen as a technology, a general rule of thumb is that an MDM project is actually 20% technology, 80% new processes.

In fact, at Daymon, Beniwal avoids using the three-letter acronym altogether. "If we say 'MDM' to our senior team, their eyes just glaze over," he says. "We just talk about how the products need to be managed."

With funding tighter because of the recession, not only does IT need to clearly communicate the business reasons for providing high-quality data through MDM, but the reasons also have to be translated into a specific business cost or opportunity. For instance, instead of stating, "We need a 360-degree view of the customer," a better argument would be, "We need to increase cross-selling by 20%."

That sort of business language "positions things correctly and puts a laser focus on what you're trying to accomplish," Swanton says.

Making the Business Case

One business case for MDM would be to argue that it can help prevent inaccurate order deliveries. If 5% of your shipments are returned because the ship-to addresses were inaccurate, what does that cost in terms of time and labor required to readdress the packages, money for postage and possibly lost customers? "It takes time [to explain a scenario like that], but that's what the business guy will understand," Swanton says.

A second business case is that MDM can help curb procurement costs. Say a manufacturing company uses the same part in 30 plants, but various systems call that part by different names. If data were harmonized, the company could get volume discounts and it would have greater negotiating power.

A third business case for MDM is that it helps avoid data errors. Say you have a new ERP application that isn't working correctly, resulting in failed product runs and an inability to keep items in stock. "Half the time, it's due to [data] errors" that could be fixed via MDM, Swanton says.

There are some telltale signs that data is being managed poorly and you need to undertake an MDM project, he says, and they often have an emotional element. "Usually there's an undercurrent of rage of 'I can't get the reports I want,' 'The system messed up this order' or 'There's been an invoice returned over here,' " he says. "We need to get out of the emotional area, profile the data, look at the complaints and trace the root cause to see what the problem is."

The upshot: "There is no such thing as an MDM project — there are only business projects where MDM is part of the solution," Swanton says.

Marcelo De Santis, director of enterprise master data at Kraft Foods Inc., can attest to the need to focus on solving business problems. He says that an ambitious MDM initiative that his company began in 2005 lost traction after a couple of years, only to be put back on track when Kraft embarked on a global SAP implementation.

"It changed the perception of MDM because there was an understanding of how important good data was to the SAP implementation," De Santis says. "Before, it was, 'Let's boil the ocean.' Now, it's, 'Let's focus on a specific business need and what we need to do to make that happen and have a way to measure against that.' "

De Santis moved from hanging the business case around MDM itself to discussing the importance of

analyzing spending data at all global business units to identify potential savings. He also stressed the importance of quickly absorbing recent acquisition Cadbury-Schweppes. Both projects required MDM under the covers.

A sign of success came after the completion of an MDM initiative in Europe, when it was the chief financial and procurement officers — not De Santis — who insisted on driving the effort further into the global organization.

So far, De Santis says, Kraft has made a "significant investment" in MDM, mainly using SAP-based technologies. The effort included improving automation of data management and workflows, establishing data ownership and data quality, and cleansing data from as many as 20 sources to import it into the new ERP system.

Benefits include shortening the process for new product introductions — because there's a standardized process and a single place to manipulate new data — and reducing the cost of managing vendor data by having a central place to enter vendor details.

Avoiding the 'Big Bang'

Kraft isn't the only company that learned a lesson because it tried to take on too much too soon. Beniwal says that Daymon began its MDM initiative with the overly ambitious goal of fixing four types of data at the same time: supplier, product, customer and employee.

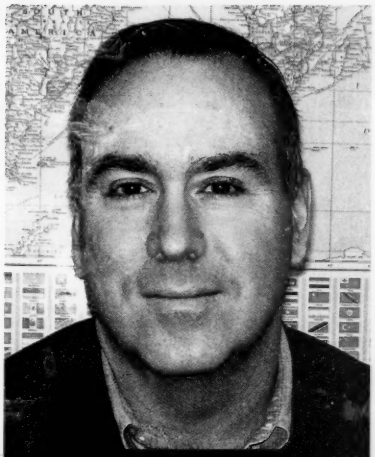
The company quickly scaled back and prioritized its MDM implementation by focusing on the highest-payback domains — product and supplier — with the goal of lowering costs. It took eight months to implement those domains, and the system went live late last year. This year, the company has focused on the customer and employee domains.

Other pare-backs included shelving the idea of providing real-time data to operational systems and instead going with batch updates. Daymon also stuck with English-only implementations rather than local-language systems.

"People want to go for the big bang, but that reduces the chances of success and introduces more risk," Beniwal says. Swanton agrees. "Think a couple of years ahead," he says, "but deliver in six-month intervals." ◆

Brandel *is a* Computerworld *contributing writer. Contact her at marybrandel@verizon.net.*

Avon Gets a Global Data Makeover



Avon standardized its product categories globally as part of an MDM initiative, says VP Peter Winters.

IN 2001, Avon Products Inc. embarked on an MDM initiative to improve management of its product portfolio by creating a common categorization scheme for all of its lines, from beauty to fashion and home goods.

For instance, an offering like scented shower gel might have been categorized as a personal care product in some markets but as a fragrance elsewhere. Now it's categorized the same way globally.

"We went from roughly 10 product categorization schemes to one," says Peter Winters, vice president of enterprise information management.

At the same time, Avon embarked on several business transformation programs, including a move from country-based marketing to one based on clusters of countries, and from local supply chain operations to regional and global ones. Both initiatives required standardizing the free-form product and supplier data generated by local offices, Winters says.

Using MDM technology from Data Foundations Inc., Avon converted hundreds of thousands of items in marketing and supply chain systems worldwide into a standard format.

In addition, Avon "looked at opportunities where we could design major new systems to work with the centralized MDM strategy from the start" as legacy systems were phased out, Winters says.

Now, he says, Avon can analyze product performance, confident that the aggregate data for products, locations and suppliers are standardized and accurate.

– MARY BRANDEL

"There is no such thing as an MDM project. There are only business projects where MDM is part of the solution."

BILL SWANTON, ANALYST, GARTNER INC.

Security Manager's Journal

MATHIAS THURMAN

Looking Gift iPads in the Mouth

The company announces free iPads for everybody, but can all those personal devices be allowed on the network?

MY COMPANY had excellent news last week, announcing stellar earnings. It was especially welcome after a difficult year of budget cuts, layoffs and a general decline in morale. To address that last issue, the company decided to give every employee a gift, and I'm not talking about a $25 Starbucks gift card. No, the plan was to hand out brand-new iPads to everybody. What could be cooler, right?

I was pretty excited, until this beneficent iPad giveaway ran up against one of my most important policies.

The glow faded pretty quickly, because right after the announcement, I passed by the CIO's office and noticed a bunch of people huddling around the conference table. I joined them and found out that they were discussing how to best make it possible for employees to connect their iPads to the corporate network. My jaw dropped.

"You know that we don't allow personally owned devices to connect to the corporate network, right?" I inquired. Debate ensued, with some arguing that the iPad is similar to the iPhone, others saying that an iPad is unlike a laptop because it can't be used to download intellectual property, and one person arguing that you can't access any domain resources from an iPad.

Wrong on all counts. An iPhone can connect only via ActiveSync and is limited to synchronizing e-mail data. That's not the case with the iPad, and IP would be at risk. Domain resources can be accessed, even via a device that isn't "on the domain," as long as you know your domain password. Besides, within a few months, I'm sure someone will create an app allowing iPads to join a Windows domain.

We realized that we needed to discuss changing the policy.

Currently, our policy states, "Personally owned or non-company-owned devices are not to be connected to the corporate network." To me, that means no wired Ethernet cables, no use of access points, and no use of the VPN client. Naturally, we make exceptions and turn a blind eye to some violations. For example, we let contractors use non-company-owned devices to connect to a conference-room jack. But as technology and the world change, the number of exceptions rises. Besides the iPad situation, some of the pressure points on our policy are the CIO's "bring your own PC" proposal and the advent of virtual desktops. That blanket policy statement no longer flies, so I had to decide what I really care about, from a security perspective.

JOIN IN the discussions about security! **computerworld.com/blogs/security**

Trouble Ticket

» Every employee is getting a free iPad, and IT wants them to be able to connect to the corporate network.

» It's time to restate the policy on personal devices and find a way to allow more leeway while keeping things secure.

The Security Angle

In the end, I have two primary concerns. The first is protecting the network from an untrusted resource. When an unpatched or unprotected resource is attached to our network, bad things can happen, and we've seen plenty of them in the past.

The second concern is that we should have a right to access or confiscate personally owned devices. Currently, for example, if an employee departs the company or is under investigation, we can't force him to let us take an image or remove files from a personally owned device for either security or business-continuity purposes.

The first concern is one I can address with a combination of policy and technical controls. The second requires input from our general counsel, which I promptly sought. He said that as long as we employ banners that employees have to click on in order to access the network, we should be in good shape. We already do this for VPN, domain and wireless access, but not for computers connected via an Ethernet cable. This is where NAC comes into play, and is yet another justification for investing in the technology. ◆

This week's journal is written by a real security manager, ***"Mathias Thurman,"*** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

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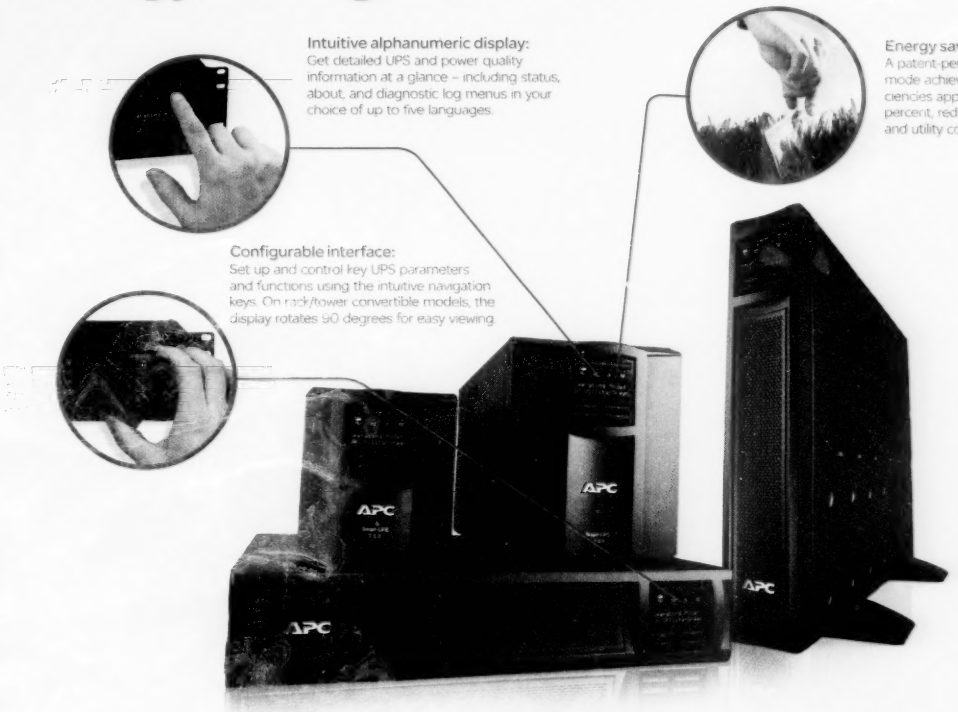
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OPINION

PAUL GLEN

Processes and The People Factor

A good process has much in common with good code, but code is executed by machines, not humans.

AS AN IT management consultant, I look at a lot of processes. They're everywhere. And so are the misconceptions about what makes them useful.

Through the years that I've been in IT, process has become the default solution for most technical management problems. Projects failing? We need a new process. Trouble prioritizing work? A new process will solve that. Bad relationship with users and customers? You guessed it: It's all in the process.

I think that our attraction to processes is natural. They feel familiar, and a good process shares many of the virtues of good technical solutions. A good process, much like good code, effectively resolves seemingly complex problems with conceptually simple solutions. There's an element of deterministic instruction. A good process is not just a random collection of good ideas, but a step-by-step approach that provides actionable instructions. All the common issues and options are anticipated, and specific instructions are available. And a good process looks like code, providing guidance on what should be done, by whom and when.

But the similarities between code and process can also lead us astray.

Code is executed by machines, which have no feelings about the tasks they carry out. They have no aspirations, resentments, anger, pride or ambition. A 386 does not envy a quad-core.

Code branches on computable facts, whereas processes must account for subjective experience. No matter how complex the calculation, the decisions about which steps code executes are derived from data. That's true to an extent for processes, but more subjective measures related to the feelings of the people involved also come into play. At some point, facts are not enough.

Code does not care about stakeholders. Processes need to account for the complexity of human politics and relationships. Successfully completing most processes requires building consensus among stakeholders, anticipating and overcoming resistance, and managing expectations.

So whenever I am asked to review a process in order to try to repair or replace it, there are a few key questions I ask about it. They all boil down to different aspects of the fact that processes are designed for humans and not machines.

Obviously, the first question is, **will it lead to the desired outcome?** No matter how well a process handles humans, if it doesn't manage the work, it's worthless.

Next, **how does it balance competing goals?** All work is subject to competing demands. Time, scope, cost and quality are the classic foursome. Rigid processes ignore this constant balancing act or presume permanent solutions. Fragile processes place the balancing in the hands of a single individual, usually a sponsor or manager. More robust processes build dynamic balancing among stakeholders into the procedure itself.

Third, **does it account for the human needs of the people executing it?** Since work is done by people, processes that guide work allocation need to account for the variability in the emotional and personal needs of people.

Fourth, **how does it anticipate and channel political concerns?** Various stakeholders always have divergent views and emotions. Fragile processes disregard this. Robust ones reflect the likelihood of coalition-building and irrationality.

Remember, an effective process is designed for human usability. ◆

Paul Glen is a consultant who helps technical organizations improve productivity through leadership, and the author of the award-winning book *Leading Geeks* (Jossey-Bass, 2003). You can contact him at info@paulglen.com.

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SCO

SCO UNIX BUSINESS SALE

The SCO Group will conduct a sale of substantially all assets associated with its UNIX operating system product business. The asset sale will be free and clear of liens and encumbrances pursuant to Section 363 of the U.S. Bankruptcy Code. Interested parties must submit a bid by close of business, October 5, 2010.

Company Overview: The SCO Group, Inc. is a leading provider of reliable, cost-effective UNIX® system software products and related services to a wide array of business and government customers around the globe. SCO owns the UnixWare and OpenServer businesses and has rights to software code of the core UNIX operating system, which was originally developed by AT&T/Bell Labs. Customers using SCO's operating system include Fortune 500 companies, public sector and defense organizations around the world and many thousands of small to medium businesses in vertical markets such as pharmaceuticals, retail, telecom and industrial manufacturing. SCO has employees and representation around the world.

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mfisler@oceanparkadvisors.com, (310) 670-2704

Career Watch

Skills That Pay

ICE.COM ASKED, "What is the most difficult skill set or position to fill today?" Not only is demand strong for the skills on this list, but Dice notes that these positions pay an average of $10,000 more annually than the national average for tech professionals. What's more, IT professionals with these skills are receiving pay raises that are twice as much as the raises being given to technology professionals overall this year.

1	Java/J2EE
2	Security
3	Software developer
4	SAP
5	Database administrator
6	.Net
7	Oracle
8	Sharepoint
9	C#
10	Active federal government security clearance

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SOURCE: DICE.COM HIRING SURVEY OF HIRING MANAGERS AND TECH RECRUITERS, MAY 2010

70%

Percentage of 303 IT workers surveyed who said that social media tools make them more productive.

SOURCE: FORRESTER RESEARCH INC. STUDY, Q1 2010

ASK A PREMIER 100 IT LEADER

Melvin Evans

The IT director at law firm **Hand Arendall** *answers questions about advancing from the help desk, dealing with a boss who claims your ideas as his own, and coping with 'stupid' users.*

I've been on the help desk at a midsize company for three years. I want to move into more hands-on work, but so far no luck. Any advice? It helps if you've given your absolute best effort in your current position. Volunteer to help out on a major project. Express your desire to learn more and enhance your skills. Identify an existing problem that has gone unaddressed and find a solution. Document the problem, the solution and why you think it is the best approach. Submit your idea. Being proactive and taking some initiative without stepping on people's toes is a great way to get the opportunity you desire.

If you have a question for one of our Premier 100 IT Leaders, send it to **askaleader@computerworld.com**, and watch for this column each month.

Keep in mind that the business plan has to be considered. Are there actual openings in the group you want to work in, or is it just something you want to do? If you did get the opportunity to move into this role, would they have to fill your current role?

How can one best cope with a boss who routinely claims others' ideas as his own? Document, document, document. I preach that daily to my team. Always document your ideas, and describe the problem and your solution. Date and/or time-stamp your documents. State that you'll be more than happy to provide more details about how you reached that solution. Most people who take credit for the work of others have no idea how the solution was reached, and eventually they'll need to be able to explain it.

We all make fun of users, but I am completely fed up with their stupidity. In all seriousness, what can be done about it? If you want to lessen the pain of dealing with such users, then you need to make an effort to help them improve. Teach them instead of just fixing things. Show them the correct way and how to avoid making the mistake again. Create how-to sheets for the things they ask you about the most and that you think are the easiest to correct. Use images or screen captures to do so. Be sure to keep your information simple and concise. Make those sheets readily available, and keep them up to date. If your company will allow it, you can also do "lunch and learn" workshops, where you discuss various topics over brown-bag lunches. In many instances, users struggle with a task because it's something they don't perform on a regular basis and they forget how to do it. For others, a task may appear more complicated than it is or include too many steps.

Sr Programmer Systems Analyst (Working Title: Sr Computer Systems Analyst) for Lane County, $55,952 - $77,480. BA/BS degree preferably with course work in computer science and three years minimum experience. To apply before 11/28/10, visit www.lanecounty.org/jobs/ or contact Human Resources, 541-682-3665. EOE / ADA

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Minimum experience required for all applicants: Proficiency in C/C++ programming languages; prior knowledge designing and developing software in a Linux RTOS based development environment; at least 2.5 years of software development and/or sustaining experience; and knowledge of signaling and security protocols. Minimum education requirements:
Software Engineer, Level I: B.S. in Computer Science or equivalent.
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Send cover letter and resume to: Susan Anderson, Acme Packet, Inc. 100 Crosby Drive Bedford, MA 01730

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SHARKTANK

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

HAL MAYFORTH

Sneakynet

This contractor pilot fish is at a client site. "The network was going crazy," fish reports. "This was a big site, with lots of routers and subnets all carefully segregated. Something was hosing this big-time. Sniffers told us we were seeing 'contamination' between subnets, which we eventually pinned down to two departments in adjacent wings of the corporate building: Legal and Development." So fish and his team decide to walk the floor to see if they can spot anything out of the ordinary.

At first, everything looks normal. But then someone on the team sees an Ethernet cable snaking around a corridor. The cable is plugged into two network jacks on the wall. And it doesn't belong to fish's group. "We dug a bit," says fish. "Turns out that Legal was blocked from open Internet access; Development wasn't. Some bright character in Legal figured out if he plugged a cable into a Development jack around the corner, they got out to the Internet without filters. I never found out, but I really hope he got fired."

Just Thought I'd Ask

This pilot fish has spent months trying to figure out what to do about a fiber line that's overloaded with traffic from simply too many users. "The only solution proved to be to replace it – an uphill battle over funds, in this economy," says fish. "I was successful at justifying it and finally got approval to trench and pull new cable. The day we changed the line from 100Mbit/sec. to 1GB/sec., I confirmed their increased speed and functionality with our clerks. They told me they once timed a 'save' with a stopwatch and found that it took one and a half minutes; when they tried that save again, it took about three seconds. Immediately, one turned to me and said, 'Can you make it faster?' "

No Problem There!

User complains that her PC has no network connectivity, so this support pilot fish gives her a call to do basic troubleshooting before making a desk-side visit. "I describe the network cable to her and ask her to confirm that it's connected firmly on both ends," says fish. "Check. I ask her to restart her computer. She does. The problem persists." So fish starts trying to determine whether the problem is with all network functions or only some. Can you use the Web? "No," user says. OK, can you send or receive e-mail? "Oh, yes, no problems there," she says. Ah, fish says, so it's only some network functions that are having problems? Some things aren't working, but e-mail is? "Right," user says. "I just log onto my co-worker's computer instead, and e-mail works just fine."

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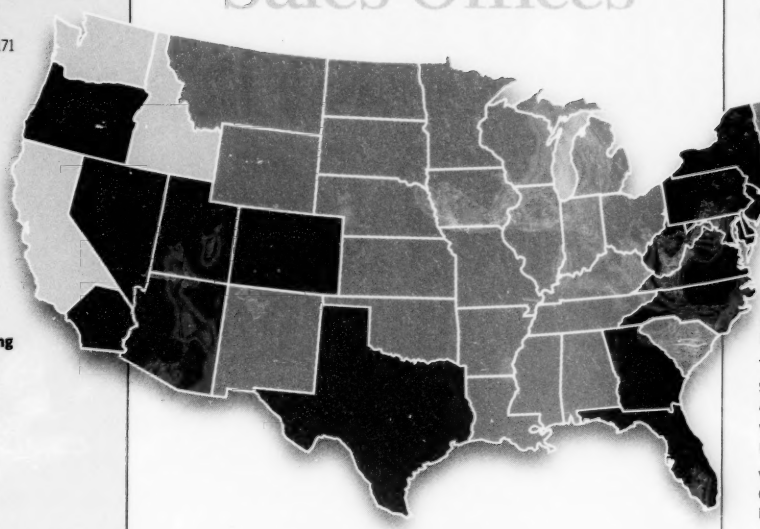

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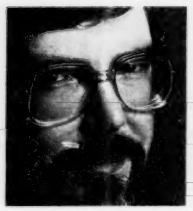

OPINION

FRANK HAYES

The Cloud Issue You Really Can't Ignore

MAYBE IT'S TIME to rethink the cloud. Yeah, I know — at this point, most IT shops haven't thought through the cloud the first time. But Microsoft's recent troubles keeping its cloud services available to users shine a harsh light on the issue of cloud availability and reliability.

A bigger problem than reliability is all those round trips between your apps and your data.

Trouble is, those are the wrong things to be thinking about.

Sure, it sounds bad when a vendor as big as Microsoft can't keep its cloud network running. It's not comforting to know that Google, Amazon, Rackspace and other cloud providers have had outages too. So has software-as-a-service king Salesforce.com.

Look, the cloud involves too many miles of somebody else's wire between users and their applications for networking hiccups to be eliminated completely. But cloud availability will get better. It's a problem that cloud vendors know about — and know they have to solve.

Let's think about a much bigger problem: The cloud is a good place to move a stand-alone virtualized server (or it will be, once vendors get their availability act together). But how much of your current data center falls into that category?

Don't answer yet. First, think about all your virtual-server applications that don't *really* stand alone. They talk to shared data stores or other applications. Their performance literally depends on how far data has to travel. Inside your data center, that's trivial. But up in the cloud, millions of round trips could be necessary between an application in the cloud and data in your IT shop. Even at light speed, that takes time.

Maybe you're thinking you could send the whole group of applications that use the same data stores up to the cloud. No more round trips, right? But one key principle of cloud computing is that you never know exactly where an app will run. With some providers, apps and data could end up communicating between New York, Silicon Valley, Seattle and Mumbai — and total network latency could go from a problem to a catastrophe.

You can solve those problems. But that might mean redesigning how those applications work, how they communicate and how they interact.

Now think about this: That's the *pretty* part of your data center. Then there's the ugly stuff, the part we don't like to think about. Apps that, say, scrape some mainframe screens, combine their contents with data from specialized industry-vertical software, then run the result through legacy business logic that no one has touched in years for fear of breaking a critical piece of some department's business process.

Our data centers are littered with that kind of cruft, accumulated over decades as we've moved from one IT paradigm to the next. There's never time or money to fix it because, kludgy as it is, it still does what users need, and untangling it will be all IT cost with no business-side benefit. But without that untangling, it will never work in the cloud.

So here's something worth thinking about: How much of what's in your data center is ready for the cloud? How much of it will have to be reconfigured, rebuilt or re-architected before you'll be able to move it up to the cloud? How much will never be cloudworthy?

And do you really think you'll have thought that all through before Microsoft learns how to run a network? ◆

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